The NEW ZEALAND JOURNAL OF AGRICULTURE

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THE NEW ZEALAND
JOURNAL OF AGRICULTURE

Vol. 66. No. 4.
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Published by direction of Hon. J. G. Barclay, Minister of Agriculture.

Since the publication of articles on this subject in the June and July, 1942, issues of this Journal investigations have been undertaken by the Animal Research Division of the Department of Agriculture to ascertain the best means of prolonging the life of rubberware for milking machine plants. Both the physical and the chemical aspects are being studied, and this article should be regarded as a preliminary statement for the guidance of milking machine users.

Conservation of Rubberware

— By —

W. G. WHITTLESTON, Physical Chemist, Wallaceville,
G. M. MOIR, Dairy Chemist, Wallaceville,
and K. J. McNAUGHT, Research Chemist.

FROM the physical angle, an attempt has been made to help the position by drawing up an Emergency Standard Specification covering milking machine rubberware. The main object of this specification is to reduce the amount of rubber used on milking machinery to a minimum consistent with efficient milking. The dimension of the Standard rubberware are specified within very narrow tolerances, and when made in accordance with the specification such rubberware has given a satisfactory performance under test on various farms.

With a view to ascertaining how well the Emergency Standard rubberware is standing up to practical field conditions other than those which have been under the observation of officers of the Department of Agriculture, a circular was sent to all Farm Dairy Instructors early in December, 1942, asking for information on cases where Standard rubberware has been faulty. In reply to the first circular, a considerable amount of information was received which indicated that most of the rubberware examined was not Standard and did not bear the brand "N.Z.S.S.E.74." A second circular, making clear the nature of the Standard rubber was sent out and to date few replies have been received. Samples have been received from various sources other than the Farm Dairy Instructors, and a careful examination of these has been made.

Saving Rubber

Before discussing the results, reasons for applying standardisation as a method of conserving rubber should be discussed. So serious is the need to save rubber that many industries have been closed down because their products were not considered to be absolutely essential. In other cases, raw rubber has been replaced partly or wholly by reclaimed rubber. Unless the situation becomes absolutely desperate, recourse to the use of reclaim in milking rubberware will be avoided, although work is at present being undertaken to discover to what extent such a method of conservation could be applied should an extreme situation arise.

The present Emergency Standards are based on the following considerations:—

Rubber Content.—In the case of inflations, it has been shown that too high or too low a raw rubber content will shorten the life of the article. Hence, the rubber content is fixed between 60 and 68 per cent.

The Physical Properties of Rubber.—The following physical properties of the rubber used for milking machines have been standardised at levels which indicate good quality:—

Hardness,
Tensile strength and
Elongation at break.

This guarantees the toughness and elasticity of the rubber.

Dimensions.—The wall thickness, internal diameter, and other relevant dimensions have been standardised at such levels as to secure satisfactory performance with the use of a minimum amount of rubber, the dimensions being limited by very narrow tolerances.

The introduction of such measures is justified, firstly, because it will effect a saving in rubber; and secondly, because it guarantees a satisfactory article to the farmer. The burden placed upon us by the Japanese acquisition of most of the world's rubber supplies is thus shared by all concerned with milking rubberware from the manufacturer to the farmer. The manufacturer is asked to maintain a very high level of accuracy in his pro-

duct, the milking machine firms help in the task of adjusting cups, etc., to fit the new sizes, and the farmer is asked to take a little more care of his rubber.

Samples Examined

The results of our examination of samples of faulty rubberware are summarised as follows:—

Of the total number of 62 samples supposed to be Standard, only 26 could definitely be identified as such, 3 were dubious, and 33 were definitely not Standard. It should also be noted that of the 26 samples of rubberware marked as Standard, only 8 complied with the specifications for wall thickness in the case of inflations, or for wall thickness and internal diameter in the case of tubing.

In the case of inflations, it is important to note the causes of failure with different types. Of the total of 12 samples which failed due to cutting either by the rings, the plugs, or nipples, 5 were Standard, 7 were non-Standard, and 3 of the latter had a nominal 7/64in wall. Where failure was due to tearing, 8 samples were non-Standard, 5 of these having a nominally 7/64in wall. One Standard sample failed due to this cause, it being a straight inflation, while the remainder were bulb-topped.

The above results are not a cross-section of normal milking rubberware as they have been selected as being Standard, thus reducing the number of 7/64in walled inflations likely to be sent in. It would, therefore, appear that trouble due to both tearing and cutting occurs with most types of inflations, and it is surprising to see trouble due to tearing with 7/64in inflations.

A fair proportion of the total cases of failure is due to cutting in the cup. This may be due to the following causes:—

(a) Sharp, ragged rings.

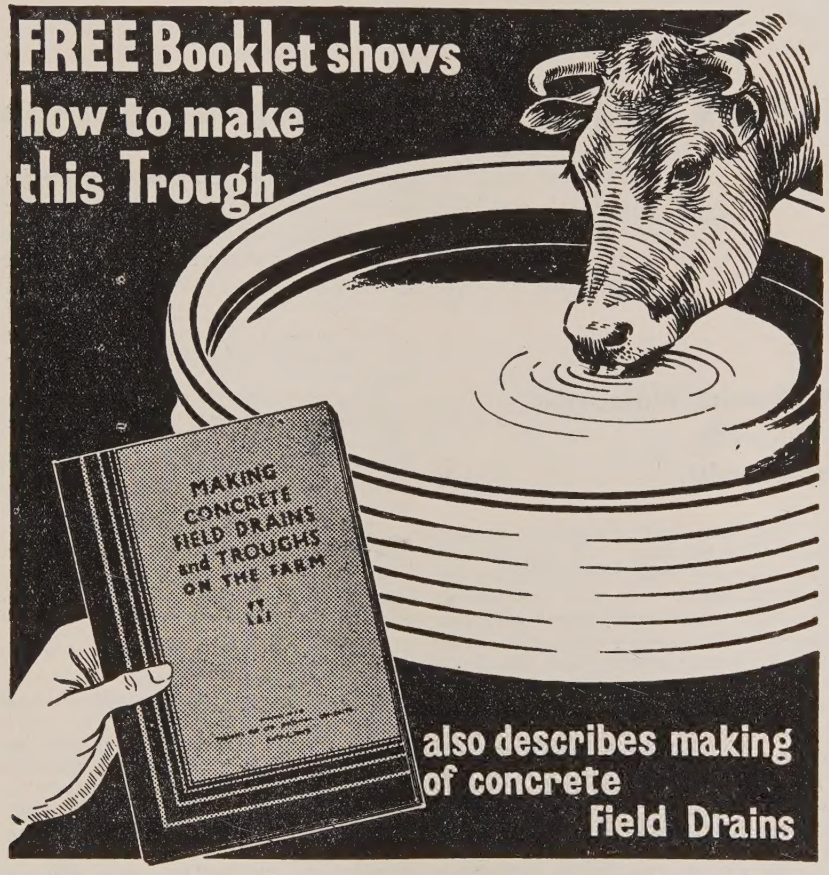
(b) Cups so shaped that the inflation projects above the top lip so that if the cups fall the rubber may come in direct contact with the hard floor.

(c) Faulty fitting plugs.

(d) In the case of cups in which the bottom of the inflation is held by a threaded nipple and a ring trouble may be experienced with slipping due to the thinner wall of the Standard inflations. If the nipple is tightened too much, the rubber will cut. Another ring is the only practical solution to this problem.

Where trouble is experienced with tearing of the tops of inflations, it is probable that in many cases a knock or small cut has started the tear. Bulb-topped inflations are normally thinner near the middle of the bulb than elsewhere, and should be treated with care. If it is possible to use straight inflations, less trouble will probably be experienced.

If it is found that Standard inflations do not fit a cup properly, force should not be used to ensure tightness of nipples, etc., but the correct rings, plugs, etc., should be obtained from the most suitable milking machine agent. Because of the urgent nature of the rubber situation, every care must be taken to conserve the rubber parts of milking machines. The use of slightly thinner walls in tubing and inflations means that brutal methods of treatment must be avoided entirely. Further, it should be borne in mind that with a thinner wall there is less cushioning effect to a blow. Cuts will start more readily as a result. Under average shed conditions with care taken in washing, etc., Standard inflations have been used for four months and still had life in them. This period is not recommended for hygienic reasons, but it can safely be stated, as a result of practical trials, that Standard inflations will last and give a good performance for as long as is desirable from the point of view of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The chief points arising from the above examinations are:—

1. All types of rubber will give trouble due to ill-fitting or sharp rings, plugs, or nipples.

2. Where a thinner wall is used, greater care is needed because the smaller amount of rubber gives less cushioning. Brute force must not be used.

3. Where a 3/32in (Standard) walled inflation slips in a cup at the top ring, the latter can be expanded by forcing it on a steel cone until it makes a good fit with the thinner rubber.

4. Plugs which will not fit may require replacement.

5. All metal parts coming in contact with rubber must be smooth, well tinned, and clean.

Cleaning Milking Machines

The boiling-water-and-caustic soda method of cleaning milking machines and rubberware, when properly applied, gives good results, but many farmers dislike caustic for various reasons and prefer to use washing soda. This may sometimes do the job, but it is not nearly as powerful as caustic, so plenty must be used—a good handful to a four-gallon can of boiling water. Washing soda is particularly valuable with hard water which it softens more effectively than does caustic soda, but three-parts of the crystals contain nearly two parts of water and only one-part of the active chemical which is known as soda ash. Farmers who prefer washing soda to caustic soda would be well advised to buy soda ash, or still better, a special mixture containing about 75 per cent. of soda ash and 10 per cent. to 15 per cent. each of tri-sodium phosphate and metasilicate of soda. The last two alkalis have very valuable properties which ensure that particles of fat and milk residues are easily rinsed off the equipment. Dairy supply firms make up such special mixtures and some dairy factories supply 7lb. bags retailing at about 4s. Such mixtures are inclined to become hard and lumpy after a time so a sharp tool may be needed to scrape the soda into a powder form which will readily dissolve in boiling water. The amount required is one teaspoonful to each gallon of boiling water, or a tablespoonful to a four-gallon can, taking care to add the powder to the water, not the other way round. If necessary, a clean stick or metal rod may be used to stir the water and make sure that the powder dissolves.

At the present time, if tri-sodium phosphate is in short supply, it may need to be replaced by a higher proportion of metasilicate of soda in the mixture. Some farmers have been getting excellent results by using in each four gallons of boiling water one (or even two) teaspoonfuls of the special soda ash mixture **together with** one teaspoonful of caustic soda. Thus the powerful germ-killing properties of caustic soda are combined with the water-softening and good-rinsing properties of the constituents of the special soda mixture.

A well-kept machine should be capable of being easily dismantled for inspection, as various accessories about it are likely to accumulate trouble if neglected. For example, eleflator pumps should be treated in precisely the same way as a set of teat-cups to maintain them in a clean, sanitary condition. In single-pipe machines the vacuum line to the claws is operated by a pulsator on the main milk pipe and some types of pulsators allow milk spray to get through the vacuum line to the back of the inflations. Thus moist deposits accumulate in which germs can grow, and the alternate pulsations may transfer some of the deposit back to the milk line so as to contaminate the milk seriously. Further, any material accumulating behind the inflation will, in time, spoil the rubber and shorten its life if steps are not taken regularly to inspect and clean this part of the machine.

Cleaning Rubberware

In the past, farmers have been encouraged to discard their rubberware, especially inflations, sooner rather than later, both to ensure quick milking and to maintain the best hygienic conditions. Now that rubber is so scarce, it is most important to make it last longer, and nothing will achieve this better than proper attention to cleaning it. Grease and dirt are the enemies of rubber. The outsides of the long milk and vacuum tubes and claw tubes must be regularly washed with hot water and soda to get rid of dirt which they gather during milking operations. The inflations should receive special attention. These usually wear first at the mouth, which should be frequently brushed with hot water and soda.

The life of the inflations will be prolonged if they are removed once a fortnight, or better, once a week, from the teat cups and soaked for several hours (e.g., between morning and afternoon milking) in a fairly strong soda solution, which is more effective if used hot. Trials which have been carried out in the laboratory at Wallaceville have shown that this method is surprisingly effective for removing accumulated deposits, even when they have become hard and dry. Metasilicate of soda is recommended for this, but the special soda mixture described above will do very well. A bucket

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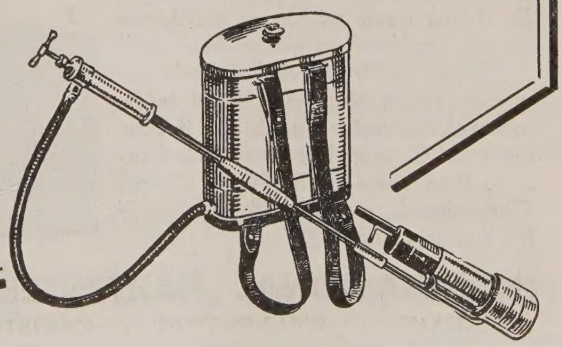

should be provided with sufficient boiling water to cover all the inflations and to this the metasilicate or soda mixture should be added at the rate of one heaped teaspoonful per quart or one heaped tablespoonful per gallon. When the soda is dissolved the inflations are put in and left to cool slowly. If a suitable vessel such as a large iron pot is available, the solution with the inflations may be kept warm for some time, but care must be taken that the inflations are not left in contact with metallic copper. Rubber is quickly spoiled by contact with untinned copper or brass, so such a vessel should not be used unless the inflations can be hung up in it in a bag or otherwise so as to ensure the rubber being kept out of direct contact with the metal.

After some hours' soaking, the inflations should be removed from the soda solution and brushed in hot, soapy water and well rinsed in clean water before replacing in the teat cups. After this treatment, the opportunity should be taken of turning the inflations end for end in the teat cups, but unfortunately not all types of cups allow this to be done satisfactorily. Not merely inflations but the long milk and air rubbers and claw tubes and other rubber parts benefit by occasional soaking in this way in hot soda solution, which will remove accumulated deposits and prolong the life. Discarded rubbers should also be cleaned by this method to check further perishing so that when collections are made of discarded rubber, it will be in the best condition to be reclaimed for further use. When the teat cups in use do not allow inflations to be turned end for end, the inflations discarded are usually somewhat stretched, but often appear capable of further use in another type of cup. Such discarded inflations are specially worth cleaning up, and should be put away in a cool dark place till they are disposed of.

An important cause of deterioration of rubber is the absorption of butterfat which leads to the surface of the rubber becoming tacky or sticky. Rubber has been known to absorb as much as its own weight of butterfat, and in actual use, portions of inflations have been found to have absorbed at least a third of their weight of fat. To check this, regular cleaning with hot soda solutions is essential. Vaseline is also readily absorbed by rubber and is even more difficult to remove than butterfat, especially when applied before milking so that it becomes worked into the inflations. These are then still more difficult to clean and their life is thereby shortened. If required, vaseline or similar teat-salve should be applied in small amounts and only after milking.

Farmers are often encouraged to put utensils outside to drain and air off, but light, especially bright sunlight, causes rubber to perish rapidly, so care must be taken to keep teat cups and milking rubbers hung up where they will be out of the sun. Those portions which are stretched, such as the ends of rubber joining the claws to the milk line or to the teat cups, or the mouths of the inflations with rings inside, perish very rapidly in bright sunlight, especially if in a dirty condition. By giving closer attention to these and other details, farmers will help the war effort in two ways. Their rubberware will give longer life and their milk or cream will be of better quality.

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Every avenue is being explored in the drive for increased egg production. Much help in this direction can come from the part-time poultry-keepers with a hundred or more laying birds, and it is hoped that farmers will respond to the call for an increase in the number of poultry kept on farms. Besides assisting the war effort, part-time poultry-keeping has already proved a profitable side-line.

POULTRY ON THE FARM

— By —

F. C. BOBBY,
Superintendent of Poultry Husbandry, Wellington.

THE greatly increased demand for eggs has placed poultry keeping in a prominent position in the present primary production programme. The required increase cannot be made good by the commercial poultry-keepers alone; in fact, during normal times the Dominion's egg supply depends to a large extent upon part-time and back-yard poultry-keepers. Since much of the stock required by these two classes of poultry-keepers comes from the commercial poultry-farm, steps have already been taken to encourage owners of these farms to increase their numbers of breeding birds. An increased number of hatching eggs, day-old-chicks, and perching pullets must be available to the smaller poultry-keepers if they are to contribute their quota to the national drive for more eggs.

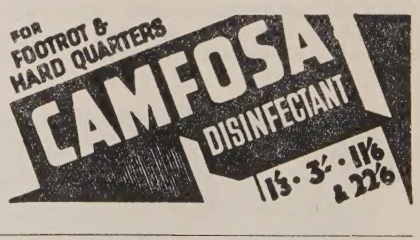
The commercial poultry-keeper has the knowledge with which to tackle any contemplated expansion of his poultry plant, and is in close touch with the Department of Agriculture if advice is required. Recently, the Department of Agriculture made available to householders a leaflet entitled "Backyard Poultry-keeping," together with plans of houses suitable for six or twelve birds, and this is still available to all who wish to learn the first principles of keeping poultry in small numbers.

It now remains to offer some general advice to the part-time poultry-keeper; in particular, farmers who are in the position to maintain flocks of between a hundred and three-hundred birds. It has been a common practice in the past for dairy-farmers and others to maintain such flocks, thereby supplying their own establishments with eggs and placing surpluses on the market. Many are still keeping poultry, but on some farms poultry-houses are empty, owing to shortage of labour. Every possible effort should now be made to increase existent flocks, make such flocks more productive, and refill empty houses.

Profitable Side-Line

Poultry-keeping on farms is a practical proposition, possessing definite advantages not available to many specialised poultry-farmers. Too often, however, poultry is treated as a side-line, requiring the minimum of knowledge and attention. It is not surprising, therefore, that trouble is experienced, and the impression gained that hens are both a nuisance and unprofitable. No other class of stock is approached with so little understanding of their needs and with so limited an amount of attention. If understood, and given reasonable attention, poultry as a side-line on a farm today will show a profit.

Briefly, farm flocks have the following advantages. Placed first among these advantages must be the benefits of free-range conditions. By this is meant that the birds receive unrestricted freedom over clean grassland. Nothing is so conducive to health and maintenance of constitution. The presence of birds in paddocks need in no way interfere with other classes of stock, and the latter will not prove a nuisance to the birds, if feeding is carried out in the poultry-houses. The free-range method of running poultry, while tending to build up constitution, is the best-known method of protecting the birds against disease. According to the class of farm under consideration, some home-produced poultry foods may be available, and thereby reduce considerably the cost of maintaining a flock of birds. Reference is here made to the availabilty of home-produced wheat, maize, oats,



Help Your Hens Through the Moult

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During the Moult, feed at least 5%

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or curds from milk; again, suitable green food is often available or can be made available with a minimum of labour. In corn-growing areas, straw as litter for the poultry-houses is to hand for the taking.

Consideration may now be given to a few of the practical aspects of managing poultry in limited numbers.

Breed of Poultry

Having regard to the stock generally available throughout the Dominion, it is suggested that the choice of breed of poultry be limited to White Leghorns, Black Orpingtons (Australorps), and Rhode Island Reds. White Leghorns are the most popular breed, and good birds are therefore more easily obtained.

Age of Birds

More eggs are produced by a laying hen during her first laying year (pullet year) than during any succeeding year. It is obvious, therefore, that there should be a tendency to keep rather more pullets than hens. Only the best of pullets should be retained as hens for a second laying season. It is not economical to retain laying birds for three laying seasons, unless such birds are of outstanding quality, and are required for breeding purposes.

Since pullets will develop and produce more satisfactorily **if not mixed with hens**, at least two houses should be available, set well apart, and if possible in separate paddocks. The pullet house, for example, may be built to accommodate one hundred birds, while the second house should be large enough to take 60 to 75 hens, or those birds selected for retaining for a second laying season. The number which are worth keeping for two seasons will vary from year to year.

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Early moulters, under-sized birds, and those unhealthy in appearance are among those which should be discarded. Thus, towards the end of each laying season the older birds are marketed, a proportion of the previous season's pullets are moved over to the smaller house, and the large house is filled up with new season birds. Each house, in turn, should be thoroughly cleaned between the moves suggested. This is an organised method of management, and prevents old and unprofitable birds being run on year after year unnoticed.

Housing

Space does not allow a detailed description of suitable housing, but when building the following points should be observed:—

(a) A concrete floor (or a wooden floor raised off the ground) is more easily kept clean, and therefore provides a better protection against disease infection.

(b) A house should provide good ventilation, but should not subject the birds to draughts. A dry house is essential, and good ventilation gets rid of unwanted moisture. This necessitates ventilation at both the back and the front of a house.

(c) Allow every bird three to three and a half square feet of floor-space, and eight inches of perching room on the roosts (ten inches per bird for Black Orpingtons).

(d) A nest-box should be provided for every four or five birds in the house.

Feeding

No complicated system of feeding is essential. It is possible to reduce feeding to two meals daily, namely a wet mash of two ounces (weighed dry) per bird in the early morning, with a grain feed of one and a half to two ounces of grain per bird at the end of the day. In addition, **green food** and a **shell-grit** should be fed. The green food may be chopped and fed in a trough or hung up in the house whole for the birds to peck. Shell-grit should be placed in a box or trough and be available at all times. An ample supply of clean water is an obviously essential. In the poultry notes published in this issue of the "Journal" will be found a description of soaked grain feeding, particularly suitable where wheat is either grown on the farm or is readily available. Reference is also made in these notes to curd feeding, a system of feeding recommended for consideration by dairy-farmers.

Eggs For Market

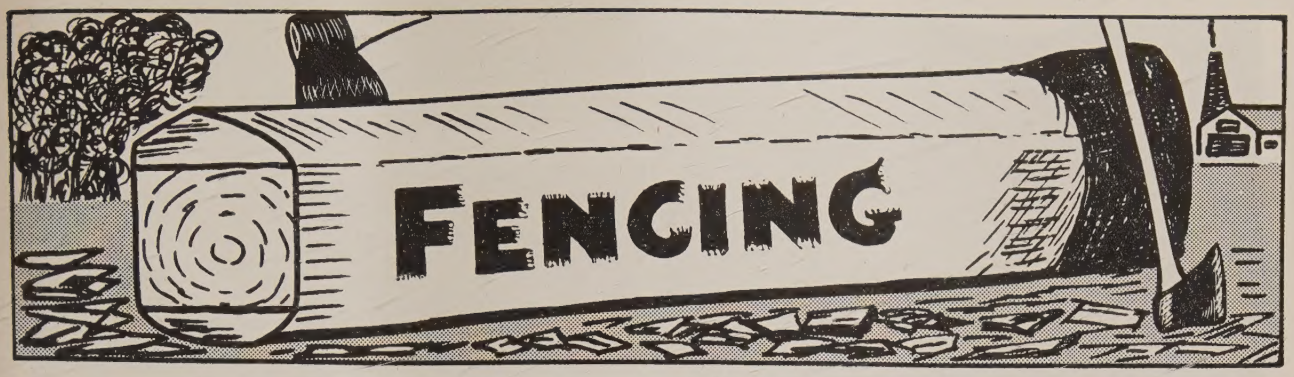
Where poultry is maintained purely as a side-line, they may receive less attention as compared with birds on a commercial poultry-farm. One side of management frequently neglected is the care of nest-boxes. These are allowed to become dirty or short of nesting material. Eggs are broken in the nests, and droppings allowed to accumulate as the result of a few birds roosting in these nests at night. This means dirty eggs, which must be either washed or marketed dirty. Washing can be a laborious job, and tends to lessen the keeping qualities of such eggs. If marketed dirty, the eggs are depreciated in value and thereby lead to dissatisfaction regarding the price paid for them. Regular attention to nest-boxes will obviate these troubles and ensure that a more valuable product is marketed.

Annual Replacements

Where poultry is maintained as a side-line only, and the time to be spent upon such is limited, breeding and hatching with incubators may be eliminated by the purchase of day-old pullets from a reputable commercial poultry-breeder. This entails rearing, with the need for a brooder-house, and preferably colony-houses on free range during the growing stage after six weeks of age. While entailing more housing, equipment, and time, the cost of the pullet on reaching the laying stage should be reduced as against purchasing the bird at a mature age. Alternatively, perching or started pullets of 10-12 weeks of age may be bought. Only the labour and housing covering the growing period have then to be met. Many pullets of this age are placed in large houses, and are even allowed to sleep on the floor. A warning against this practice must be given. If placed in a permanent house of the laying type they must be perched from the start—a procedure which entails a nightly visit to the house to ensure that every pullet is on the perch.

For a farmer with two laying-houses —one for pullets and one for hens— consideration should be given to building one or two range colony-houses for use in suitable paddocks. Birds so housed range freely over the paddock and build up robust constitutions, which stand up better to the strain of heavy egg production. This type of small house can be moved from paddock to paddock, and thus allow the growing pullets a fresh rearing ground each year. This is a safeguard against such disastrous troubles as coccidiosis and worm infestation, which are prevalent on fowl-sick land.

Farmers with flocks of poultry, and those contemplating poultry as a side-line are reminded that advice and practical help may be obtained from a poultry instructor by writing for assistance to the Department of Agriculture, Auckland, Palmerston North, Wellington, Christchurch, or Dunedin. Plans of suitable housing are available, while full details concerning feeding will be sent on request.



The Importance of Well Kept Fences On the Farm

— By —
E. B. GLANVILLE,
Acting Fields Superintendent,
Auckland.

THE efficiency of grassland management on a farm is dependent, to a great extent, on the management and control of stock. This can only be carried out if the farm is adequtely fenced into suitably-sized paddocks with stock-proof fences. Poor fences do not enable stock to be controlled efficiently and invariably make the management of the farm uneconomical. Broken down and badly maintained fences cause considerable trouble on farms, not only through stock becoming mixed, but also with labour being continually wasted in sorting up stock so mixed and endeavouring to return the stock to correct paddocks, when the labour exerted in this respect could be more profitably used in some other work on the farm.

THE subdivision of a farm with well-erected fences is most important for convenient and efficient working, but it is surprising to see so many farms where the work of keeping fences in repair is so often neglected.

Providing good fences are originally erected, maintenance work is not great, but if this maintenance is neglected fences soon become in a condition of disrepair similar to that shown in Figure (1), where no battens remain, allowing the wires to hang loose, thus making this fence useless for holding stock. Instead of being an asset on the farm, this fence has developed into a liability just through neglect. Fencing material and labour on a farm are too valuable to allow this sort of thing to go on.

In Figure (2) are shown good, well-erected fences commencing to fall into disrepair. If maintenance work is undertaken at this stage the job of putting the fences in good order would not be great. With the shortage of labour on farms, and with so many jobs facing the farmer, it is quite likely that the necessary maintenance work will not be carried out on these fences until battens become dislodged, or wires break, and the fences allow stock to pass through them. Why not do the repairs before this happens, and when the job does not present a long and perhaps difficult task?

Concrete Posts

Owing to the present-day difficulty and the expense of obtaining totara and puriri fencing posts, greater use is being made of concrete fencing

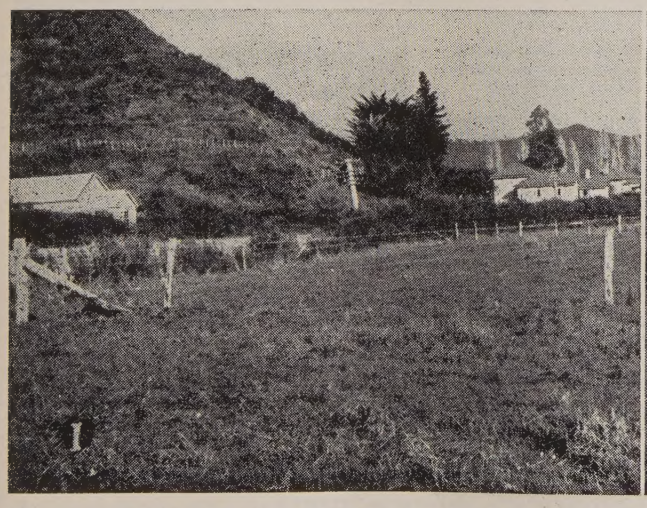


Figure (1): Lack of maintenance has resulted in this fence becoming useless for holding stock. *Figure (2):* "A stitch in time saves nine." A little attention now and then will save a big job if repairs are done immediately instead of left for many more weeks.

Figure (3): A neatly constructed fence where home-made concrete posts have been used. *Figure (4):* Home-made concrete strainer and strut, making a neat, strong job.

material. This material can be obtained from merchants handling farmers' requisites, but many farmers find it less expensive, and more convenient to make their own. A well-illustrated article giving detailed information on the making of concrete posts on the farm, written by Mr. J. A. S. Miller, Instructor in Agriculture, Wellington, was published in the Journal of Agriculture, March, 1941, and is now available as a free bulletin*. Farmers who are interested in making their own concrete fencing material and are not sure of the procedure to adopt would obtain much useful information from this bulletin. Illustrations 3 and 4 show a neat, strong fence constructed with home-made concrete posts, giving a close view of a home-made concrete strainer and strut in position. Sawn battens, the ends of which had previously been

*Bulletin No. 184, "Concrete on the Farm," by J. A. S. Miller, obtainable free from the Department of Agriculture, Wellington, Auckland, Christchurch, or Dunedin.

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Figure (5): An outsize in fences—an unusual sight to see fences as massive as this.

dipped in hot tar, complete an exceptionally efficient fence.

There are few farms with fences which can be described as being too elaborate or too strong for the job. Figure (5) illustrates a half-chain section of such a fence. The posts are totara and of such size that two outsize strainers could be obtained from each of them, and they are spaced four to the chain. The battens are also totara and would need to be only slightly larger to enable them to pass as posts. The strainers (Figure 6) consist of the whole trunk of a totara tree, while the struts are huge totara limbs, approximately one foot in diameter and 12 feet long. With battens spaced barely one foot apart, and these huge posts spaced four to the chain, this makes a massive fence.

The material was so huge that it was necessary to seek the aid of a bullock team to get the strainers and posts into position. It may be considered outright extravagance to use such valuable fencing material in this way, but on this particular farm dry, knotty totara logs lie on it in abundance. When logging up the farm it was found difficult to dispose of this material as it was too knotty for building purposes, and in preference to burning it was utilised in the manner illustrated.

Standard Fence

An article of this description would not be complete without giving details of a standard fence. Figure (7) shows a panel of a standard seven-wire fence where the posts (6 in. x 4 in. x 6 ft. 6 in.) are spaced four to the chain, and the battens (2 in. x 2 in. x 3 ft. 10 in.) are spaced sixteen to the chain, with strainers 8 in. x 8 in. x 8 ft. long and struts 6 in. x 4 in. x 10 ft. long.

The following specifications of a standard seven-wire fence are given as a guide to those who may be seeking this information.

Specifications

Fences are to be erected on lines set out by the owner or his appointee. Straining posts are to be at least four feet (4 ft.) in the ground, securely footed, strutted where necessary, rammed and erected every ten (10) chains more or less, depending on the situation of corners and gateways. Before erection, each end and corner straining post is to be neatly morticed to receive the strut at a point twenty-two (22) inches from the top of the post.

Figure (6): The strength of a fence is governed by the strainers. This angle post is typical of the strainers used in the massive fence described in this article.

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Straining posts at corners where fences meet at right angles are to be fitted with two struts, the foot of the second of which is to be placed two (2) feet within the fence line.

Intermediate posts are to be spread evenly four to the chain or **placed where necessary***, placed two feet six inches (2 ft. 6 in.) in the ground, and securely rammed, and in hollows or where subject to lifting through strain of wires securely footed or stayed with wire. Battens to be securely stapled to wires with the staples driven home, to project two inches (2 in.) above top wire and to be spread evenly between posts at the rate of twelve (12) to the chain.

Wires to be tightly stretched between the strainers and securely stapled to the posts, with the staples just so driven that they do not bear on the wire. The wires on the fence to be seven in number—one barbed and six plain. The fence is to be four feet (4 ft.) high to the top of the posts and the top wire, plain, is to be three feet ten inches (3 ft. 10 in.) above the ground. The second wire is to be barbed and is to be placed eleven inches (11 in.) from the top wire: the third wire nine inches (9 in.) from the second: the fourth wire six inches (6 in.) from the third and five inches (5 in.) is to separate the remaining three wires from one another, and the bottom wire is to be five inches (5 in.) from the ground. Gateways are to be left where indicated by the Farm Overseer and are to be eleven feet (11 ft.) wide.

*Even spacing of posts is only possible when the land surface follows an even grade; any local unevenness must be overcome by altering the spacing of the posts so that the bottom wire is kept 5 inches from the ground.

Figure (7): A panel of a typical standard seven-wire fence (four posts to the chain and fourteen battens between the posts).

Where fences cross swamps, the posts are to be so spaced and arranged that a securely-footed post is to be erected immediately on either side of the swamp so that the bottom wire shall be five inches (5 in.) or less above the level of the water.

Where fences cross large hollows the ground on both sides must be sloped down to securely-footed posts placed where necessary, so that the gauge of the fence is continuous throughout.

Where fences are erected along hillsides a space of at least two feet (2 ft.) shall be benched or levelled off on the top side of the fence. Also where a fence crosses uneven ground the tops of the hummocks shall be levelled down so that for at least two feet (2 ft.) on either side the ground is not left higher than the base of the fence.

Challenge

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Methods of Treatment

By

C. V. DAYUS, M.R.C.V.S.,
District Superintendent,
Livestock Division, Dunedin.

CONTAGIOUS ecthyma, or contagious pustular dermatitis, perhaps better known as "scabby mouth" or "sore mouth," and contagious ophthalmia, more popularly referred to as "blindness," are two diseases which are not often referred to and yet are of some importance and should be of interest to many sheepfarmers in the Dominion.

Contagious ecthyma has a wide distribution. It occurs in New Zealand and in many other parts of the world—e.g., Australia, South Africa, America, and England—and in these countries it has been studied by several investigators. In New Zealand the mortality from the disease is negligible, but the symptoms are alarming when first discovered, and affected sheep lose condition and suffer a pronounced setback, the severity of which is governed by the virulence of the outbreak and the extent of the lesions—that is, the degree of injury—on the mouth.

The term "ecthyma" means an inflammatory skin disease attended with an eruption of superficial pustules of varying size. The disease affects both sheep and goats, but in this country we are really concerned only with its appearance in sheep. It is characterised in sheep by an eruption about the mouth, and the infection may also be conveyed to the udders and teats of the ewes.

First Symptoms

The first symptoms usually noted are a swelling of the lips, with the development of more or less warty, moist scabs. This swelling of the lips gives the affected animal a distinctive appearance, which is readily noticed. Actually, the eruption at first is red and papular, then vesicular, and subsequently scabby. The scabs are brownish-grey in colour, and are moist in the early stages; later they dry out, becoming hard and very often cracked.

The rapidity of spread through a mob of sheep leaves no doubt as to the infectious nature of the disease

As those farmers who have experienced outbreaks of this disease will remember, it is one primarily affecting young sheep—lambs and hoggets. Older animals may sometimes contract the disease, but in them the infection is usually of a milder type. It has been recorded that a mild infection can sometimes occur in man. In natural outbreaks the lesions of contagious ecthyma are confined to the lips and udder, indicating that the infection is a localised affair resulting from direct infection of the affected area. There is no doubt that the udder lesions sometimes seen in ewes are the result of direct infection by the lips of the lamb during sucking.

Virus Disease

Contagious ecthyma is a virus disease, and is due to a specific filterable virus. A virus is some type of infecting agent which is beyond the limit of visibility—that is, it is too small to be seen by the highest powers of the microscope. The generally accepted hypothesis regarding the general nature of viruses is that they are independent living micro-organisms. Such knowledge as has already been gained of virus diseases is of comparatively recent origin, and it is interesting to record that the virus of foot-and-mouth disease was demonstrated in 1898. This was the first human or animal disease shown to be due to an infective agent beyond the limit of visibility.

Many viruses, of which the virus of contagious ecthyma is one, can pass through the minute pores of special bacterial filters, and this is why they are termed filter-passing or filterable viruses. The term specific in the case of the virus of contagious ecthyma is used to indicate that this virus always produces the same disease and no other in susceptible animals.

There are, of course, many virus diseases, each with its own particular virus to account for it, in both plants and animals. A few examples are mosaic disease of potatoes, tomatoes, and cucumbers, acute poliomyelitis (more popularly known as infantile paralysis), mumps, smallpox, measles, common colds, cowpox, and distemper in dogs.

The virus of contagious ecthyma is highly resistant to destruction and may be preserved in the scabs on the ground for very long periods. This no doubt accounts for the recurrence of the disease on a farm after an absence of two or three years or even longer.

Infection

The commencing infection in an outbreak is, in all probability, picked up from virulent scabs in a paddock, but

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the rapidity of spread afterwards would indicate that direct contact of healthy and infected sheep is a factor. Skin injury is not always essential for the entry of the virus, but frequently there is some slight irritation about the lips, especially when one considers that sheep are often grazing where there is scrub, gorse, thistle, or stubble. There are occasions where grazing under such conditions as these, a benign irritation is produced in the vicinity of the mouth which is not dependent on the existence of the virus.

Contagious ecthyma in New Zealand occurs from time to time in the spring, summer, and autumn months. The uncomplicated case runs a course of about one month from the time of the appearance of the first lesion until the scab drops off. The lesions heal spontaneously, leaving the lips smooth and without scars.

Medicinal treatment for this disease is not particularly satisfactory, but some benefit may be derived by cleaning the areas involved in badly affected animals and applying a preparation made by a mixture of one part of tincture of iodine to two parts of glycerine. Honey and boracic acid makes a suitable ointment. Repeated applications of the selected treatment are indicated.

There is, however, a method of prevention by vaccination which is practical in use and justifiable from an expenditure point of view, and can be used in those areas where contagious ecthyma is frequently observed.

Vaccination Method

The vaccination method is employed with success in America, and more than

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a million doses are used annually in the State of Texas. The Chief of the Division of Veterinary Science at the Texas Agricultural Experiment Station states that farmers there declare that they would not be without the vaccine, because it saves so many lambs not only from direct losses from sore mouth, but many more from screw-worm attack in case the animals contract sore mouth. Fortunately, the fly responsible for screw-worm does not exist in New Zealand.

Inoculation of susceptible animals with properly prepared material from the lip lesions induces the formation of a benign local lesion which sets up a definite solid immunity that endures for at least eight months or even longer. A desiccated scab emulsion is prepared in New Zealand at the laboratory of the Department of Agriculture, and this has been used with success in various parts of the Dominion.

The technique of vaccination is analogous to that of smallpox vaccination in the human subject. It is comparatively simple, and can be conveniently carried out on lambs at marking-time.

A small area of skin inside the flank is cleaned and the skin stretched with the fingers and thumb of one hand; then several superficial scratches about ¼in. long are made with a scarifying instrument. One drop of vaccine is thoroughly rubbed into the scarified area with a small stiff-bristled brush.

It is necessary to emphasise that the skin should be lightly scarified, only the superficial layer being broken through; it is neither necessary nor desirable to draw blood. The areas scarified must not be large, and the amount of vaccine limited to one drop or so, otherwise the resultant "takes" will be unnecessarily severe.

About the fourth or fifth day after vaccination there is evidence of reaction at the site of vaccination.

Contagious Ophthalmia

The other disease is contagious ophthalmia in sheep, better known as "blindness" or "pink-eye." This complaint is quite well known to sheepmen throughout the Dominion and is more prevalent in adult sheep.

In this disease there is pronounced inflammation of the membranes lining the eyelid (conjunctivitis) and also inflammation of the cornea (keratitis). The cornea is the transparent anterior portion of the eyeball.

A non-infectious inflammation of both these areas may occur from external injury or the introduction of some foreign body, such as dust, chaff, or grass-seeds. It may also be caused in lambs by irritation resulting from turned-in eyelids (entropion).

The infectious type which sets up these two conditions of conjunctivitis and keratitis in sheep occurs in New Zealand and several other countries. It has never been sufficiently studied, but in all probability this again is a specific virus disease.

First Signs

Generally, the first indication of the disease is that a number of sheep are blind, and on closer inspection it will be found that the front of the eye is no longer clear and transparent but has assumed a hazy blue appearance, later changing to a milky-white opacity. If, however, the symptoms are more closely studied the first thing noticed will be a flow of tears from one or both eyes. The affected animal is particularly sensitive to light, and the eyes are frequently closed or kept partially closed in order to avoid as much light as possible.

The membranes of the eye will be seen to be congested and bright red in colour, and as the infection progresses the cornea becomes involved and is no longer transparent. The infiltration is often deep-seated, and the opacity spreads until it covers a large part of the cornea. The surface of the cornea may be quite smooth and intact, or it may be ulcerated.

Constitutional disturbance seems to be very slight or absent, but naturally there is some falling-off in the condition of affected sheep. Tears from infected sheep have been shown to transmit the disease to healthy sheep after a short incubation period. In naturally occurring cases there is a tendency to spontaneous recovery in approximately three weeks from the onset of symptoms. As the acute inflammatory stage subsides the eye gradually clears up, but occasionally in an odd animal there results permanent opacity of the cornea, causing blindness.

It has been established that a fairly lasting immunity develops after recovery from natural infection. No method of vaccination, however, has been evolved to afford any protection against the disease.

Treatment

Treatment is not very practical because of the difficulties of repeated treatment of large numbers of sheep. If possible, an affected mob of sheep should remain isolated from the rest of the flock on the farm. They should be depastured in a paddock where there are no drains, creeks, or ditches, so that the minimum amount of damage is done through the temporary blindness.

Affected eyes may be treated by the installation of a few drops daily of a 10 per cent. solution of Argyrol, or a cheaper preparation consisting of 2 grains of sulphate of zinc, 10 grains of boric acid, and 1oz. of distilled water.

The eyelids could be lightly smeared with a small amount of a 2 per cent. yellow oxide of mercury ointment.

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Grassing of Maritime Sand Country in Otago

— By —
S. H. SAXBY,
Instructor in Agriculture,
Dunedin.

AROUND the coastal districts of Otago there is in the aggregate a large area of good, gently undulating sand country. Much of this is in its present condition virtually worthless; sometimes it is bare of vegetation but more often it is covered with gorse, lupins and other non feed producing plants. The successful grassing of this country is almost a perennial problem. In the grassing of ordinary farm soils there are problems enough associated with matters outside human control. With sand country most of these same problems are present, but are often intensified or added to by factors that are peculiar to this type of country. For example, wind may merely influence the success or otherwise of the grassing down of ordinary farm lands. On sand country, however, wind during the critical period around seeding time may be not merely an influencing factor, but a critical determining one. Similarly, factors such as topography, temperature, and rainfall distribution are all more important on sand country than they are on ordinary farm lands.

Important Points

In the grassing down of sand country one is, therefore, forced to take precautions against certain eventualities that are peculiar to this class of land. The following are the most important:

1. The stabilization and consolidation of the sand prior to and during the period that the young sward forming plants are becoming established.
2. The raising of the soil fertility to a sufficiently high standard in order that the young plants when once established may both survive and produce useful feed.
3. The conservation of moisture, particularly during the initial stages of establishment.
4. The sowing of those species of pasture plants that are most likely to be able to survive and produce under these particular conditions, which vary from rich, heavy swamp to the lightest, and windblown sand knolls.

Trial Laid Down

With a view to obtaining some information on these questions in Otago a trial was laid down in the lower Portobello district in the spring of 1936. One of the main objects was to obtain information on the performance of subterranean clover. The area on which the trial was sown was gently undulating and partly consolidated country. The tops of the undulations were raw, loose sand, whilst the depressions were wet and rich in humus.

Prior to sowing down the area had been under crop for two years, both crops, greenfeed and turnips having been fed off. This had resulted in a fair degree of consolidation together with some increase in fertility. At the time of sowing, however, the sandy knolls were very loose, and were tending to scour with the wind.

In order to overcome the scouring effect of the wind, and to afford protection to the young seedlings a cover crop of ryecorn at 30 lb. per acre was sown over the whole area. Experience later showed that the seeding was rather light.

The trial itself consisted of a number of plots with different grasses and clovers sown in various combinations. All seed was sown by hand on a tine-harrowed surface. Subsequent to sowing, the whole area was rolled across the harrowing with a cambridge roller. The question of the efficient covering of the seed is of considerable importance. The lighter seeds, particularly ryegrass and cocksfoot, tend to remain on or to work to the top when there is any movement caused by cultivating implements. It would appear that a 3½ inch centre grain drill would be very suitable for this work.

Varieties Sown

In the trial some twenty-one different species of pasture plants were sown in the various plots. These species were as follows:

Grasses.	Clovers.
Cocksfoot	Subterranean clover
Perennial ryegrass	White clover
Italian ryegrass	Montgomery Red clover
Yorkshire fog	Strawberry clover
Danthonia pilosa	Lotus major
Poa pratensis	Lotus hispidus
Phalaris tuberosa	Alsyke
Kikuyu grass	Suckling clover
Meadow foxtail	Striated clover
Crested dogstail	Clustered clover

Other Species.
Yarrow

During the course of the trial a number of species additional to those sown appeared as volunteers. Of these sorrel, browntop and sweet vernal have been most conspicuous.

Conditions subsequent to the sowing of the trial were very suitable for

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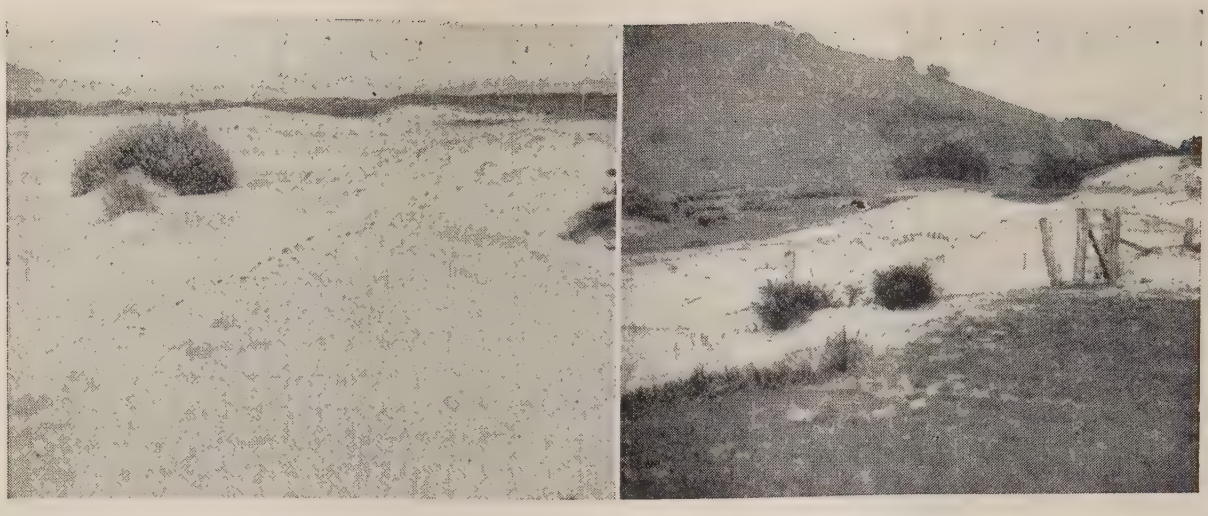
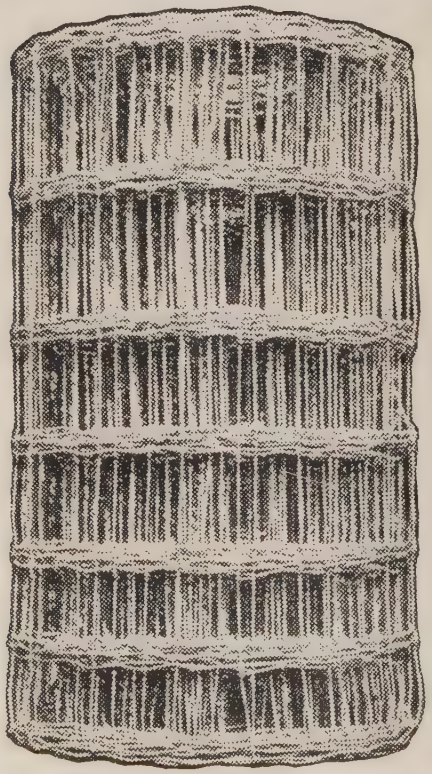


Left.—Typical undulating sand country in Otago. *Right.*—A break in the sward has allowed the wind to open up a face and develop a sanddrift right into an adjacent paddock.

establishment. The ryecorn came away rapidly and provided very good cover for the young seedlings. It lasted for almost a year, and during that time did much to prevent the blowing of sand. During the six years that the trial has been in existence very marked differences in the behaviour of the various sown species have been noticeable.

On this type of country a plant may have one or both of two values. Firstly, it may be essentially a sand binder, and secondly, it may be a feed producer and a fertility raiser. It is obvious, therefore, that in evaluating any species of plant on this country its performance in relation to these factors must be the sole criterion of its value.

For these reasons it is not difficult to understand that at one time a certain plant may appear to be of considerable value, and at another to be of little or no use. Consequently the value of any plant can be accurately determined only after a period of several years, by which time the sward as a whole has passed through its various tran-



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Left.—The stability and fertility of sand country varies considerably in a very short distance. On the left is a cocksfoot-fog sward which has been opened by rabbits. A few feet away on the right is a moist, high fertility area with rushes prominent. *Right.*—On the dry knolls cocksfoot, Yorkshire fog and browntop provide the best cover.

sitional stages, and has settled down to a more or less stable composition.

Performances

Before discussing seeds mixtures for sand country some information may be given regarding the performance of the various sown and volunteer species in this trial.

Subterranean Clover: At the time this area was sown subterranean clover was in "vogue" and a trial with it in various mixtures was deemed advisable. In the six years that the trial has been in progress this clover has had a very checkered career. It established and grew well in the first year, but then began to thin out considerably. In later years, however, it has shown signs of revival, particularly on the more moist and more fertile areas. On the whole, subterranean clover has not performed in any way approaching the way in which it has on somewhat similar country in parts of the North Island. On the raw sand it is of no value and on the more moist sand it does not perform as well as white clover. Its inclusion in mixtures for Otago sand country cannot, therefore, be recommended with any confidence.

White Clover: This established well, but except on the damp areas the amount of it present was comparatively small for the first four years. This was probably due to two dry summers inhibiting its spread by either runners or by seed. The last two wet summers have, however, resulted in a considerable improvement, and at the present time the white clover is growing quite well on all but the dry knolls. The use of white clover of a good strain can, therefore, be recommended for use on the more moist, and more fertile parts of sand country.

Montgomery Red Clover: For three years or so this proved to be very valuable except on the dry knolls. Its use on this country can be recommended on account of its production in the early stages, its fertility raising effect, and its ground covering ability. It should, however, be regarded mainly as a temporary element on all but the more fertile portions.

Strawberry Clover: This has become thoroughly established on one or two wet, low-lying areas. It has spread rapidly, and has proved to be very useful where it is too wet for white clover.

It may well be emphasised that sand country does not necessarily consist solely of acres of dry mounds that are liable to be blown away at a moment's notice. On most sand country there are usually considerable areas of wet, low-lying land which is at present dominated by rushes and "cutty grass." The grassing of this part of the sand country is no less of a problem than is that of the dry, loose ridges. The use of strawberry clover can, therefore, be confidently recommended for use on the wettest portions of sand country.

Alsyke Clover: Throughout the trial this has been present in very small amounts. At no time has it contributed sufficient feed or cover to justify its use.

Suckling Clover: This somewhat despised little clover has been present throughout much of the area as a volunteer. Where it was sown, however, it is present in large amounts on all but the tops of the very driest knolls. Even there it is growing quite well, although in less amounts. Poor plant that it may be, its sowing on these sandy knolls can be confidently recommended. On account of its cheapness a relatively heavy seeding can be applied.

Several other annual clovers such as striated clover, and clustered clover were sown but failed to establish.

Lotus major: This has become well established on some low-lying parts, where it is growing vigorously amongst rushes which have re-established. Under these conditions which approximate semi-swamp land Lotus major is of value, and its use here can be recommended. On the drier sand it is of no value whatsoever.

Lotus hispidus: It was thought that this might have thrived on some of the drier parts. The attempt to establish it, however, was unsuccessful.

Perennial Ryegrass: This grass has persisted quite well on all but the poorest knolls, but its useful production, except on high fertility areas, was limited to about two years. Throughout much of the trial the ryegrass is now stunted and nitrogen-starved. On the more fertile areas ryegrass is still the dominant useful plant. On sand country of this type it is, therefore, recommended that perennial

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ryegrass can well be used as a quick establishing and early feed-producing plant. No reliance should, however, be placed on it for permanence except on areas of high fertility.

Italian Ryegrass: For the first six months or so this, together with the ryecorn, produced valuable feed and very useful ground cover. Subsequent to this period it died out fairly rapidly.

Cocksfoot: The various sowings of cocksfoot have shown very clearly the necessity for planning for useful permanent elements in the pasture as well as the temporary ones. In the early stages cocksfoot produced very little feed, and provided no useful cover. At the present time, however, and particularly in one plot where it was sown at 15 lb. per acre it is unquestionably the best grass. It is growing well on all but the poorest knolls, and is now providing a good dense permanent cover. At this stage it must be pointed out that at no time has grazing been severe, and that it has been carried out by cattle only. Such conditions give cocksfoot every encouragement to produce and to thrive. Light grazing of sand country is most desirable in the early stages even apart from the question of cocksfoot establishment. Heavy grazing over long periods has a very harmful effect on such a pasture. The young plants are readily dislodged in the loose sand with the result that the all-important ground cover is lost. Information gained from this trial indicates very clearly that cocksfoot is of considerable value in the grassing of sand country, particularly if a relatively heavy seeding can be applied.

Yorkshire Fog: This much maligned grass is now present in varying quantities throughout the trial both as a sown species and as a volunteer. On the lower parts it serves no useful purpose as it is merely taking the place of better plants. It is on the poorer parts that Yorkshire fog is playing a very useful part. Together with cocksfoot it is providing a quicker and better cover than any other grass. Where the surface has been broken, such as rabbit burrows, Yorkshire fog has invariably been the first grass to re-establish from seed. This quick re-establishment on broken surfaces is a very important matter. The use of Yorkshire fog on the drier parts can, therefore, be recommended.

Poa Pratensis (Kentucky blue grass): On the dry sandy knolls this has become thoroughly established. Although slow to start and low in production, the use of Poa pratensis as a binding

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Left.—On the lower ground Lotus major grows up through the rushes. Strawberry clover grows well on the wettest portions. *Right.*—Rabbits may easily cause a bad break in a sound sward. Under these conditions Yorkshire fog is one of the few grasses that will re-establish rapidly from seed.

agent is fully justified. Poa pratensis was sown in one plot only and it is this plot alone that has not had one or more fairly deep burrows made in it by rabbits. This may be a mere coincidence, but in view of the strong underground system developed by Poa pratensis, it is quite likely that it does not allow of easy "burrowing."

Crested Dogstail: Nowhere in this trial has dogstail performed in a manner that would justify its use. On the moist portions it is certainly growing quite well, but here it is merely taking the place of better grasses. On the dry knolls odd stunted little plants have survived, but their contribution with regard to both production and cover is negligible.

Browntop: Although this grass was not sown in the trial, odd patches have established as volunteers. It has established and spread well on all but the very driest knolls. Although browntop is looked down on by many people there is no doubt that it is a particularly useful grass under several conditions. One of these is on sand country that is to be heavily grazed particularly with sheep. Browntop forms a compact stable turf and will stand very close grazing. A light seeding of brown top might well be included in sand country mixtures where extra stability is required, or where grazing is likely to be heavy on the drier parts.

Sweet Vernal: Throughout the trial a considerable quantity of sweet vernal has come in as a volunteer. On the drier parts where it might be of some value it is stunted and tufty, and is not as valuable in any respect as is ryegrass. Elsewhere it is of no value. The sowing of sweet vernal cannot be recommended.

Sorrel: On the driest parts of the sandy knolls sorrell has appeared as a volunteer and has made a valuable contribution towards sward formation. Many people look askance at sorrel, and quite rightly regard it as a weed on good country. On sand country, however, it can play a very valuable part. It establishes rapidly and has long underground runners which assist materially in binding the sand. Sorrel will also grow at least reasonably well under conditions where few other plants can even exist. In addition, sorrel has the virtue of giving up its place quite readily to better plants when conditions are suitable for their existence and satisfactory growth. A good seeding of sorrel can, therefore, be included for sowing out the very dry knolls.

Yarrow: Although this was sown, only very little established, and even this has not grown or spread at all rapidly. On its showing in this trial the use of yarrow on sand country does not appear to be justified.

Conclusions

The foregoing comments should indicate fairly clearly that although one

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is dealing with species suitable for sand country, such country is too complex to make any universal recommendation regarding the best species or mixture to sow.

There is a clear indication, however, that each set of conditions requires a different group of pasture plants. The low lying parts require a seeds mixture vastly different from that which should be sown on the sandy knolls.

On the sand country in question there are three sets of conditions that, whilst merging into each other, are on the whole sufficiently well defined to warrant independent treatment. Firstly, there are the raw, dry, sandy knolls that are exposed to the full blast of wind and sun. Then there is the gently sloping, somewhat more moist, and more fertile area. Lastly there is the lower lying moist to wet areas.

On ordinary farm soils the usual procedure in sowing down a paddock is to sow the whole area with a uniform seeds mixture. On sand country, however, unless it is particularly even, such a procedure is not only unsatisfactory from the point of view of the ultimate plant covering, but also from that of expense. Consequently "patch sowing" is necessary in order to secure the best results.

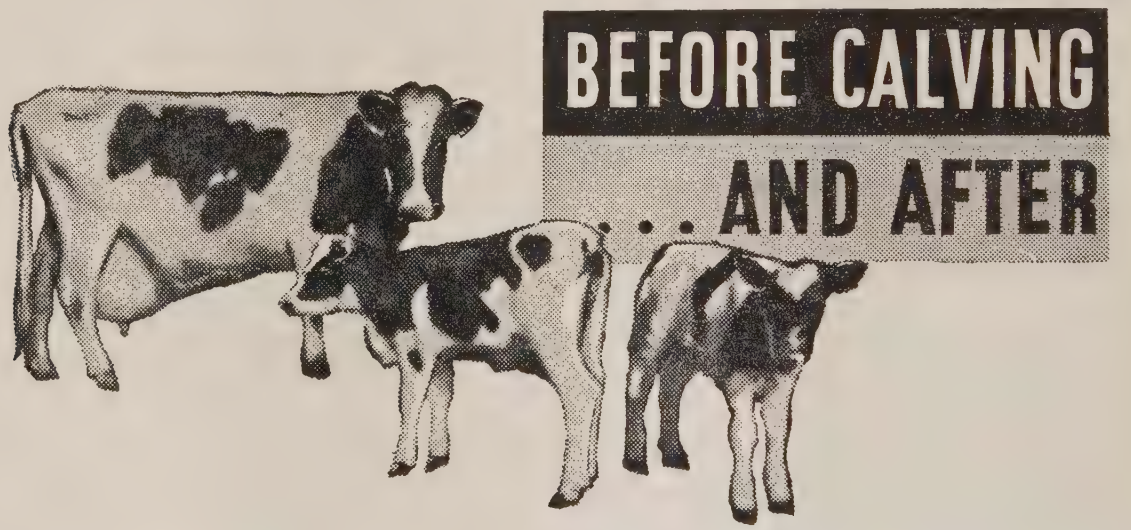
Seed Mixtures

As a result of this trial and of observations made on well-established sand country pastures the following mixtures are suggested for the three classes of country referred to above.

Mixtures such as these may, of course, be varied to suit special circumstances but should act as a guide for the most suitable species for use on the various types of country.

Alternatively, a basic mixture such as the centre one could be utilised over the whole area, the remaining portions being hand sown. Whichever way it is carried out every endeavour should be made to ensure that each soil type is sown with the seed of those plants that are most likely to be of the greatest value.

Species.	Raw Dry Knolls. Lb. per acre.	Average Sand. Lb. per acre.	Moist to Very Wet Areas. Lb. per acre.
Ryecorn	40	40	25
Cockfoot	15	10	6
Yorkshire fog	4	—	—
Sorrel	6	—	—
Browntop	2	½	—
Italian ryegrass	5	5	5
Perennial ryegrass	5	10	10
Poa pratensis	2	—	—
Suckling clover	5	—	—
White clover	—	2	—
Strawberry clover	—	—	½
Lotus major	—	—	½
Timothy	—	—	4
Meadow foxtail	—	—	4
Montgomery Red clover	—	5	—



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Care of Young Pigs After Weaning

Contributed by the Livestock Division.

IN previous articles the care and management of the sow and litter have been stressed. It is equally important to appreciate that pigs are babies until they are four months old. Where sows are neglected there is also a tendency for every other class of pig to have to put up with unsuitable conditions. However, it sometimes happens that even where pigs have been done well while with the sow, at weaning time, through lack of thought, pigs of all sizes and weights are herded together and left to grow without proper attention. Weaning-time is probably the most critical age of the pig's life, and is a time when a certain amount of neglect and improper feeding is likely to occur, with rather disastrous results. Many excellent litters that were really good weights at weaning suffer a set-back at this stage, which destroys for a time the "growth force" in the young animal, and this counts so much in economic production.

If maximum profits are to be made from pigs, they must be got away in as short a time as possible—4 to 5 months for porkers, 6 to 7 months for baconers. To do this they must not suffer any check at all, particularly at weaning.

Malnutrition

Why does this happen? One of the principal causes can be expressed in a word that must be fairly familiar to all. That is "malnutrition." The reaction to this statement by many feeders is that they give them plenty to eat. So they may, but is the right kind of feed being provided? This is really the point. Numerous trials have shown that up to the age of four months pigs require careful feeding to take them through the baby stage, and they are still babies at four months. After this age they can eat and thrive on almost any kind of food, provided there is enough of it.

However, while they are babies, pigs must be fed with care, if they are to grow satisfactorily. Too many weaned pigs are put on to skim-milk alone. Milk is an excellent feed for grown pigs, but it is too watery, and does not contain enough fat for baby pigs. Whey is even worse. It is so bad in fact that you can see them wilt when the weaners are given whey only. All are familiar with the weaner ballooned on skim-milk or whey. He looks nice and round after a meal, but remains the same weight day after day, and usually develops some stomach disorder because of this ballooning, making him unable to assimilate any of his feed; in consequence it's in one end and out the other.

If a pig gets half a pound of meal a day, the distension rarely occurs, and it gives the animal a chance to grow normally. Most feeders are familiar

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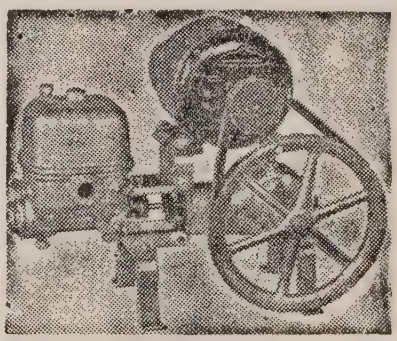

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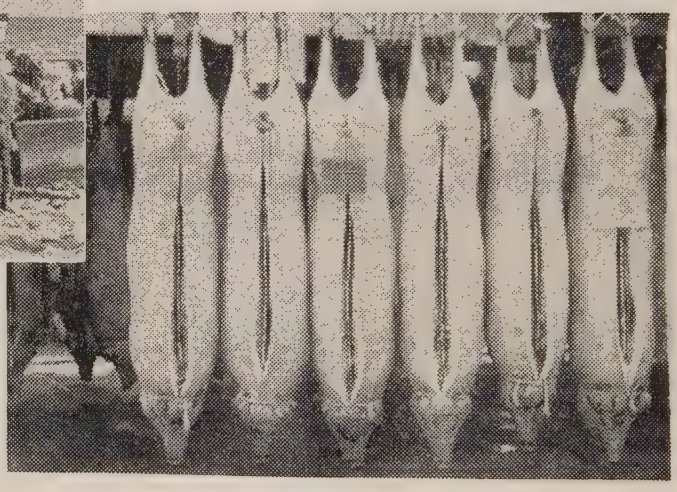

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with the fact that skim-milk has next to no fat, whereas the sow's milk has up to 7 per cent. of fat. Fat is necessary for normal growth, and the obvious thing is to provide it either in the form of meat-meal, or if grain-meal is used, by giving codliver oil, or cheaper still ordinary tallow at the rate of one teaspoonful per pig daily. Meat-meal contains 10 to 20 per cent. of fat, and half a pound of meat-meal, on the average, would contain sufficient fat to provide for the requirements of the pig at this stage. This quantity of fat in 2½ lb. of feed, the amount required by a 40-lb. weaner, supplies the fat deficiency in a reasonable way. Tallow gives excellent results also, and is cheap and easy to obtain, only one must be careful to see that it has not too much salt in it. Pigs, unlike cattle, cannot tolerate too much salt.

In addition to the deficiencies just noted, the sudden change of feeding can cause a lot of upset. This can be prevented by having the pigs used to the feed they are going to live on after weaning, long before the actual weaning takes place. Pigs, more than any other animal, react adversely to sudden changes of feed, and any change should be made gradually.

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Rations

Consider now just what the rations should be for pigs from weaning to four months old. At weaning a pig should be getting a total of 2 to 2½ lb. of feed units a day. One gallon of skim-milk or its equivalent is taken as a feed unit. This ration can be made up as follows:—½ lb. of meat-meal, ½ lb. of maize, or barley-meal, and 1 to 1½ gallons of skim-milk, plus a teaspoonful of codliver oil or tallow. This must be gradually increased until at four months old—80 to 100 lb. live weight—the pig is getting 3½ to 4 feed units a day. This amount can be made up of ½ lb. of meat-meal, ½ lb. of maize- or barley-meal, 2½ to 3 gallons of skim-milk, and the tablespoonful of tallow.

There are often times of the year when there is no skim-milk available to feed these quantities, particularly is this so in the autumn, winter, and early spring. It is necessary then to fall back on some home-grown food to make up the deficiency. This will generally be of the class referred to as roots, or it may take the form of green lucerne, green maize, or even good clover pasture.

In dealing with these foods, there are two things that must be remembered. Firstly, the quantity required to equal a gallon of skim-milk is approximately 10 lb. of pumpkins, mangolds, carrots, swedes, green lucerne, or green maize, or 5 lb. of sugar beet, apples, artichokes, or cooked potatoes. Potatoes will give better results if cooked before being fed to pigs, because in this form they will eat more. Secondly, a basic principle in feeding young pigs, or for that matter any pigs that are to be kept growing, is that they must have **at least** half their food in the form of high quality feeds, ie., as milk or grain. Stress must be placed on that **"at least."** If they get less than half their feed as concentrates they cannot make full use of roots or grazing.

Hence, when feeding a 70-lb. pig it should be given at least 1½ to 2 gallons of milk and 15 lb. of mangolds or swedes, or 7½ lb. of beet or artichokes. However, as a 70-lb. pig cannot easily eat 15 lb. of roots a day, 10 lb. being about his limit—a pig can just about eat its own weight in roots in a week, if mangolds or swedes are being used it would be advisable to feed 1½ gallons of milk, ½ lb. of meal, and 10 lb. of roots daily to the 70-lb. pig. A safe rule is to provide half the daily ration as high quality foods—milk, meat-meal, and grain—right from weaning until the pigs are 100 lb., and let them eat as much roots or grass as they want to. Most of the trouble with pigs immediately after weaning is that they get too much bulky feed. They do not make the growth they should, and develop that pot-bellied appearance which indicates poor digestion, and which is the forerunner of many pig troubles.

Worms in Pigs

Although the question of correct feeding is all-important, there are a

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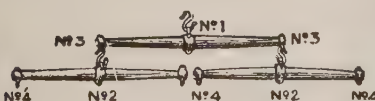

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few other points that are well worth attention. First of all there is the question of worms. There are many kinds of worms that infest pigs. The period of a pig's life at which it is most frequently infested with worms, and at which they undoubtedly do more harm than at any other time, is shortly after weaning. The symptoms of worms are a rough coat, generally poor appearance, and a hard, dry cough. Prevention is much better than cure in this case, and food feeding plays an important part in building up resistance. Information on correct treatment can be obtained through the Live-stock Division of the Department of Agriculture or from the local District Pig Council.

Handling At Weaning

Another point is the question of handling the pigs at weaning time. It is a bad policy to take the pigs away from the sow, although the practice is very general. The sow should be taken from the pigs, and the pigs should be left in their farrowing quarters for a few days after this. Pigs are creatures of habit, and any change always upsets them. To lose their mother and at the same time to be moved into strange surroundings, frequently with pigs larger than they are, gives them a shock, and consequently the check they receive is considerable. When pigs are moved to the store-pens, grade them out according to size, and do not put too many pigs into one pen—not more than ten. It will be appreciated that if pigs of different sizes and ages are run together, the big pigs get more than their fair share of the food, while the smaller ones have difficulty in getting sufficient for their needs.

Farmers are entitled to the assistance and advice of the District Pig Council Supervisors. Pig producers have provided the funds to enable these Councils to be set up, and all farmers are urged to take every advantage of these facilities. Applications for assistance should be made to the Department of Agriculture or to District Supervisors as follows:—Whangarei (Box 131); Pukekohe (Box 32); Whakatane (Box 12); Gisborne (Box 316); New Plymouth (Box 131); Palmerston North (Box 80); Dunedin (Box 693); Christchurch (Box 639); Hamilton, care Department of Agriculture.

Clean Houses

A little extra attention must be given to keeping houses clean immediately after weaning. While a litter is on the sow the sleeping quarters are usually quite clean. Presumably the sow sees to this, but when she is removed it is not uncommon to find that for a week or two a considerable amount of soiling of the sleeping quarters takes place. These quarters must be kept clean, and it is certainly easier and much better for the pigs if this is done daily. Pigs soon learn to keep their sleeping quarters clean. This brings up the question of bedding. In the winter and spring young pigs definitely need a warm, dry bed. A pig has very little in the way of a protective coat of hair, and anything that can be done in the way of keeping him warm is actually going to save a waste of food. If pigs are cold, a considerable portion of the feed consumed is utilised to keep up the body temperature. This restricts the amount that can be used to make growth, so it will be seen that the provision of a warm, dry bed is very important. Do not let it get into a wet sodden mass, as this is worse than no bedding at all.

Keeping clean the pig-houses and troughs is essential, it takes far less time to do this daily than to leave it until it has to be done. The daily cleaning of the cowshed is taken as a matter of course and is not a big job. The same applies to the piggery. If the job is left, it becomes an exceedingly unpleasant day's work and generally gets put off until tomorrow. Don't let this happen. It is not good for the pigs and is just as bad for the one who finally has to do the job.

Getting the pigs over that difficult period from weaning to four months old is of vital importance. Advice or help can always be obtained through the Department of Agriculture, or from the Supervisor of the local District Pig Council.

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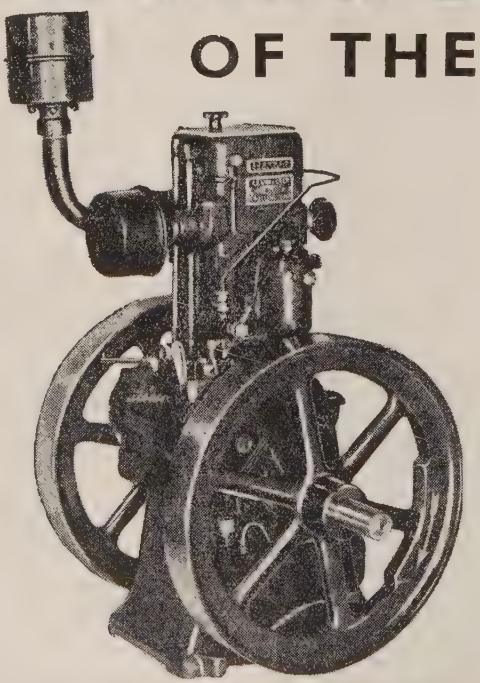

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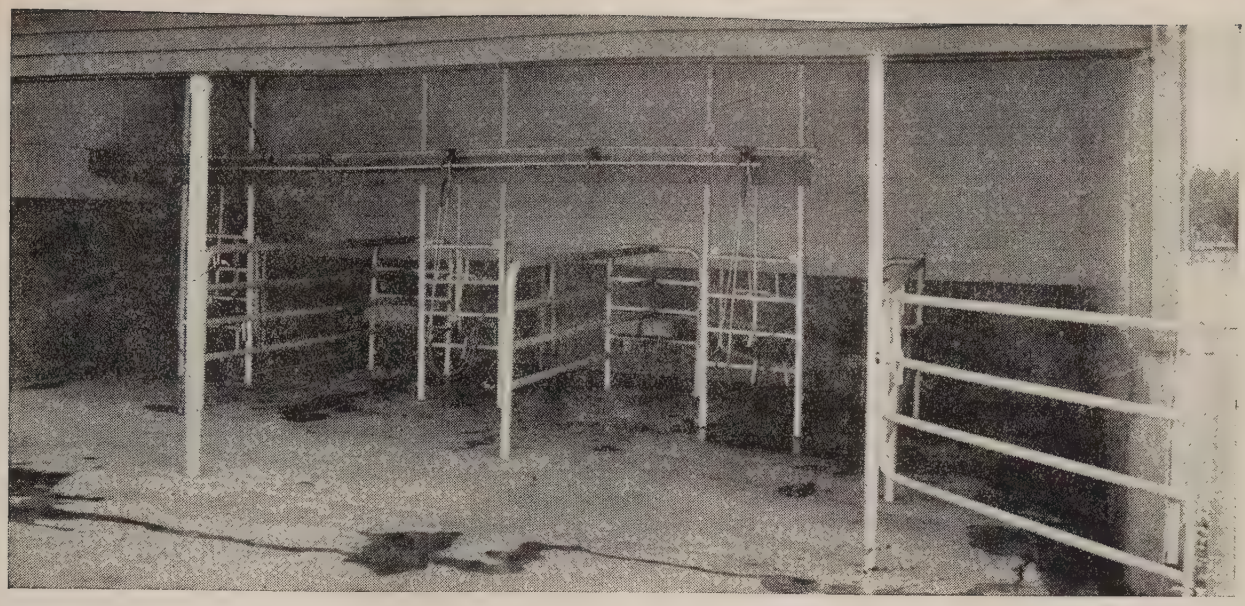

The Construction of Milking Sheds

This article is written primarily for supplying dairies, as defined in the Dairy-produce Regulations 1938. The Dairy Division does not control dairies for town supply, and where these are to be built or are likely to be used for town supply the farmer is advised to communicate with the Live-stock Division of the Department of Agriculture, as the regulations for these dairies differ somewhat from those for factory supply.

Contributed by the Dairy Division

THE milking-shed plays a most important part in dairy-farming operations, and the progressive dairy-farmer recognises that a well-planned and properly equipped shed materially assists in the production of the finest quality milk and cream. Comfort and convenience at reasonable cost are major considerations, but sanitation and hygiene must always be foremost. Apart from the cleanliness of the equipment, a pure atmosphere inside the milking-shed and milk-room has a definite bearing on quality, and the proper layout of the yards and exit-race is of the greatest importance.

Before proceeding with the erection of a milking-shed or the installation of a milking-plant the extracts from the Dairy Industry Act, 1908, and the regulations under the Act, which are given later in this article, should be read carefully, or, better still, consult tht local Farm Dairy Instructor.

The Site

The first and most important consideration is the selection of the site. The site should be governed by the fall for drainage, proximity to an adequate and permanent water-supply, the contour of the ground, convenience for handling the herd to and from the respective paddocks, and distance from the road, &c.

In the layout of the shed due consideration must be given to the direction of the prevailing wind, care being taken to have the milk-collecting or separator room at the windward end. It is also desirable to have the drainage flowing from the milk-room, etc., through and beyond the shed to a sump, which must be at least 30 ft. away from the outer edge of the yard.

Foundations Under Walls

The walls at both ends of the actual milking-shed must be erected on concrete dwarf walls 4 ft. high. This places the bottom plate above the manure-level of the cows, and will be found highly satisfactory and economical. Around the separator and engine rooms the height of concrete dwarf walls should be at least 1 ft. 6 in. and 4ft. will be still better. This will protect the timber from the moisture of the floor and outside ground, and prevent leakage of floor washings.

Provision should be made for three ventilating openings near the floor at the back and two at the front in the outside concrete dwarf walls of the separator-room. These openings will have the effect of drying the floor quickly and are much more satisfactory than ventilation at a higher level. The structure should be fastened down by means of bolts set in the green concrete of all foundations to be built upon, and posts at the end of bail partitions should be anchored to the floor in districts where strong winds prevail. The interior surface of all concrete dwarf walls must be finished to a smooth plane surface with a steel tool. Unless properly finished, these rough surfaces quickly become insanitary through milk and manure adhering to them, and are made worse by washing, as small stones and sand are scrubbed out. Foundations properly erected not only facilitate the cleansing of the premises, but add considerably to the life and strength of the building.

The bails at the heads of the cows may be dealt with in either of the following ways: (1) By a concrete sill not less than 4in. high, to be capped by the main plate throughout the length of this section and unbroken at doorways; (2) by concreting to a height of at least 4in. only that part covered by the dummies. The former method is generally considered the more satisfactory, as it is simpler to erect, and as the exit doors close against the sill

The above illustration shows an internal race milking shed built at Greytown for Mr. T. N. Smallwood, under the supervision of Mr. R. Wilson, Farm Dairy Instructor, who designed the welded tubular bails. The sides of the dummies are hinged to allow the cows to pass round the internal race, which, with the drafting gate, is shown at the right of the picture.

The tubular fittings have many advantages, but for those wishing to build in wood the shed shown in Fig. 1 is recommended.

they assist in keeping the inside of the shed clean and free from draughts.

It will facilitate cleaning if all right-angle corners, especially those at floor-level, are rounded instead of square.

Floors

All concrete floors should be not less than 3in. thick and finished to a semi-smooth surface. Gateways should be reinforced with wire or pig netting. The fall in the floor of the shed from the back wall to the gutter should be not less than 4in. in 10ft. It has been the experience of practical farmers that cows will slip more readily on a floor that is comparatively flat than on a floor with a fall. A floor with a fall requires less water for cleansing purposes.

The fall in the floor of the separator-room or milk-collecting room should be towards the door, and the floor should be raised at the four corners of the room to facilitate cleaning. The fall in the holding-yard of 3in. in 10ft. is sufficient and should be towards the main gutter and also towards the gutter outlet from the yard. The gutter should be so situated as to gather all the drainage from the milk-room and convey it as directly as possible to the sump. The fall in the gutter should not be more than 1in. in 10ft. A dwarf concrete wall 3in. high round the sides of the holding-yard is recommended. This prevents objectionable matter collecting and falling over the outer edges, causing contamination.

When the contour of the site is suitable, and where a small concrete holding-yard is used in front of the shed with a larger holding-yard at the end of the shed farthest from the separator-room, a gutter inside the shed or holding-yard is not provided, the floor of the shed and yard being in one direct fall from the back of the shed to the outside of the yard. A space is provided in the 3in.-concrete sill to allow for drainage to a concrete drain leading to the sump or manure disposal. Such a floor is more simple to put down than one in which a gutter is provided, and this arrangement of yards has the advantage of tending to keep dust and yard contamination from entering the milking-shed, especially in districts of a sandy nature.

Exit Race

The object of the fenced exit-race is to keep the atmosphere of the separator-room and milking-shed as pure as possible, and, apart from cleanliness of equipment, good surroundings and a pure atmosphere have the greatest bearing on quality. In addition to ensuring a better atmosphere in the shed the race greatly solves the farm-

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Hallensteins

29 H.B. MEN'S HAT STORES IN NEW ZEALAND.
From Whangarei in the North to Invercargill in the South.

25342

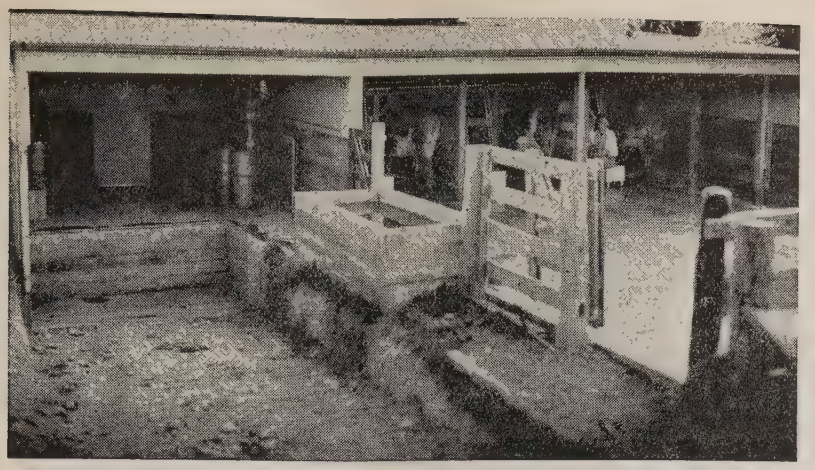

Fig. 1.—Internal-race shed with bails constructed of wood. Note sunken race for loading milk, drainage trap and concrete trough to hold overflow water from milk-cooler. Lining in milk-room should be nailed vertically. (Photograph taken before the work was completed.)

er's difficulty of keeping the exit from the shed in satisfactory condition, and is a great advance on the unfenced race off which the cows can step at any point.

The width of the race in front of the dummy bails is governed by the type of cow to be milked, but it should be made narrow—not more than 3ft. to 3ft. 9in. in width—to prevent the cows from turning. Cows will travel to the end of such a race, whereas they will stand about if a wider space is provided. For instance, an average Jersey cow steps forward 2ft. 3in., whereas a Friesian steps forward 3ft. 3in. Therefore the width of the race in the latter case needs to be increased by 9in., which will allow ample room for the cows to clear doorways.

The fall from the shed to the outer edge of the race can be 1in. in 3ft., or thereabouts. A 3in. dwarf wall on the outer edge of the race forms a drainage recess. There should be in this recess a fall of 1in. in 10ft. around and towards the main gutter, as shown in the plan.

The race shown in the plan is recommended where practicable, the milked cows being worked back to the original entrance. In this way only a gateway need be metalled, and the back of the shed is kept sweet and clean. Under these conditions the mud, if any, is kept at the extreme point from the milk-collecting room. In the working of a race of this description it is imperative that all doors should open the one way, as shown in the plan. The end of the exit-race, such as the alternative shown in the plan, should be taken to good solid ground, slightly rising if possible. It should never be taken downhill, as the traffic of cows will very quickly take the metal from the end of the race, leaving the concrete high above the surrounding ground. On the other hand, it should not be taken uphill, as water will lodge at the end of the race. The last 10ft. to 15ft. of the race should be sunk from 8in. to 12in. below ground-level to allow for the country sinking from the traffic of cows. A semi-circle of concrete, also 12in., under ground is generally provided at the end of the race or gateway and covered with metal.

Drainage Sump

The drainage sump must be situated at least 30ft. from the outer edge of the shed proper, preferably on the lee side, and made of concrete with the following dimensions: Length, 8ft.; width, 10in.; inside measurements, thickness of walls, 4in.; depth, sloping down from nothing at the inlet end to 18in. at the outlet end. The sump should be provided with a removable wooden cover to facilitate cleaning. This sump, which has proved to be very successful, is shown on the plan. One or more of these can be used as required.

The discharge of drainage into a creek has several objectionable features. It is a waste of useful manure, and may also contaminate a water-supply. A sump readily cleaned, and worked in conjunction with a portable liquid-manure tank, is therefore recommended.

Shed Construction

In setting out the building the open part or front of the shed should so face as to allow the sun's rays to penetrate the shed during the greatest part of the day. It is necessary to have the outlet doors in the back of the shed, which is also the highest part of the building, as shown by the side elevation of the plan.

A draught-proof wall the height and width of the space above the 4ft. dwarf wall is required between the milking-shed and separator-room. Dressed T. and G., preferably flooring, placed vertically on the separator-room side of the studs is recommended, as it provides a smooth surface behind the milk-vat, which is easily cleaned and which prevents milk splashes lodging in dwangs and crevices. No door is allowed through this wall, and entrance to the separator-room must be from outside the milking-shed. A draught-proof wall is also required between the engine-room and separator-room in case of a shaft-drive, and, in the case of a direct drive—*i.e.*, a belt passing from the engine-room to the separator-room—two walls with an air space 2ft. wide and open at both ends is required. No door is allowed in either of these walls, and entrance to the engine-room must be from the outside, and not from the separator-room.

The verandah front, as shown in the plan, provides convenient covered access to these two rooms, and also provides a convenient place for housing a copper or steam steriliser under cover. Wood fuel can also be kept dry under the verandah, and covered access to the copper or steriliser is provided.

Fig. 2.—Interior of milking-shed shown in Fig. 1. Note exit race with drafting-gate at right. Also glazed pipe bases under all posts.

The main pillars supporting the shed should be stepped up on a small concrete base to keep the bottom of the pillars dry, or upon glazed drain-pipes set in with the floor foundations, thereby prolonging their life. Cylindrical containers or drain-pipes set into the floor foundation and filled with concrete, and having eyelets for leg-ropes, &c., have been used by some farmers for this purpose.

Dummy Bails

Dummy bails can be either supported from the floor on a raised concrete base or suspended from the roof, but the suspension method proves most effective, leaving the floor of the shed unobstructed. When suspended dummies are adequately braced they are as rigid as those supported from the floor. The timber used in the dummies and centre studs should be dressed, as it is more sanitary and easier to clean than rough material.

Sliding Seat

The sliding slotted seat is a valuable addition, as it does away with the necessity of carrying stools from cow to cow and is, therefore, more sanitary. The seat consists of a 5ft. length of 6in. by 2in. timber set inside the dummy and resting on a short length of 1in. piping set into the bottom ends of the corner posts of the dummy bail. The end of the plank inside the dummy is fastened by a bolt through a slot some 2ft. 6in long. The plank will therefore slide sideways on the pipe to provide a seat while stripping either cow in the bail, and the slot and bolt allows the seat to slip back inside the dummy when not in use. The bottom of the seat should be 10in. to 12in. from the floor.

If the dwangs on the front of the dummy are correctly spaced to allow it, a safe recess for holding the stripping-bucket can be provided just above the sliding seat.

Door Rods

The door rods are generally made of timber, and when the exit doors open all one way as shown on the plan the rods are placed overhead. The handles can more easily be kept clean and sanitary by placing short lengths of discarded milk-piping, which can be obtained from any milking-machine firm, over the ends.

There are many variations from the wooden-door lever used in different districts, but the details required adequately to describe them would take up too much space in this article.

Internal Race Shed

As an alternative to the walk-through shed which has been described in detail, a plan of the newer type of internal race sheds is also given.

In this shed the wall at the head of the cows is extended 3ft. to include the race, and the width is consequently increased to 19ft. over all. The length is also extended 3ft., and by an arrangement of the gates the cows can be returned into the concrete yard, into a holding yard, or to a roading or paddock as shown in the plan.

The bails in which the cows are milked are wedge-shaped, and consequently it is almost impossible for even a small heifer to turn round in them. The side of the dummy is hinged, and when it is opened the cow passes out into the race behind the bails, and so round the end of the shed to the point of discharge. (Fig. 2.)

A 4ft. concrete wall is required in this shed between the separator-room and the bail at the end, but rails only are necessary between the bail and the race at the opposite end of the shed. A dwarf concrete base 18in. high is required under all the other walls, and where metal is available at a reasonable price farmers are advised to make those round the race 4ft. high, as it will facilitate cleaning.

The construction of the bails is shown in detail and need not be described. It is claimed for this type of

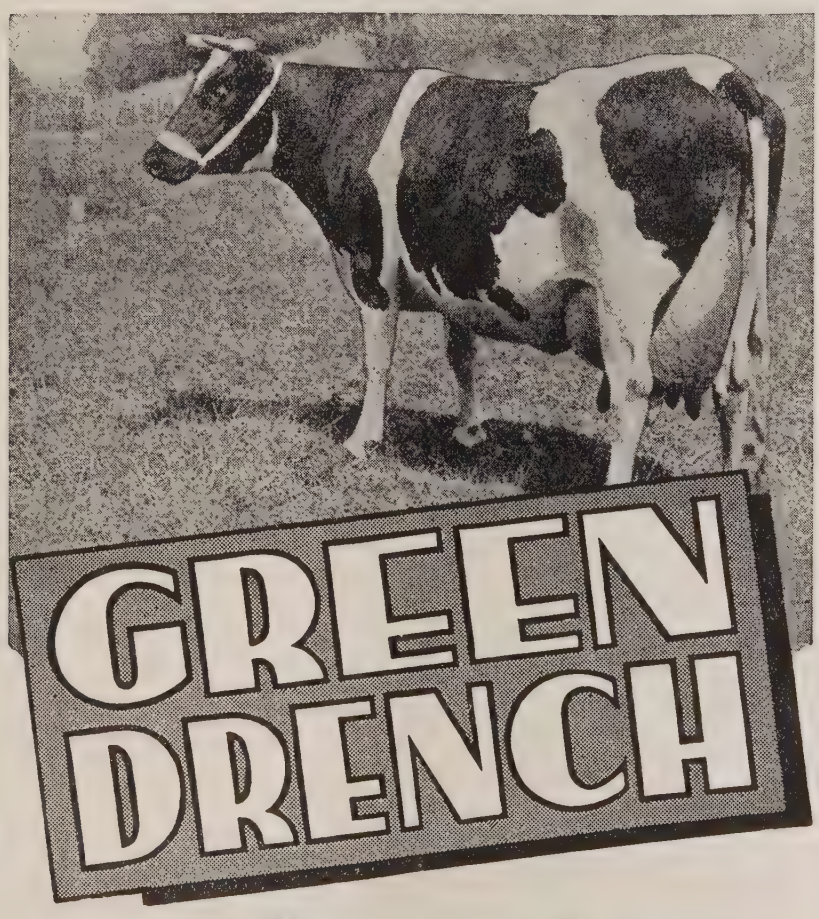

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Fig. 3.—Milk-room of shed shown on page 217. Floor built up to floor level of delivery truck, and roof extended to provide cover for truck. Note vertical lining.

shed that it is less draughty and much more comfortable to work in than the older type, and since it is all under one roof the whole of the floor is easily kept clean. A similar race can be included in the older plan if desired without altering the bails.

Milk Room

Where milking-machines and a separator are used the positions of the respective units in the milk-room are shown in the plan. These positions should on no account be altered if the maximum efficiency is to be obtained. If the shed is operated with electric power the motor can be fixed to the wall overhead, on a block of concrete raised from the floor, or to a shelf stayed out from the wall.

The type of rotary vacuum pump now being manufactured occupies a small space and can be fixed to the wall. The most important point to remember when erecting a milking-machine is that the distance from releaser to vacuum pump in any plant need not exceed 4ft. 6in. (Fig. 4). A saving can therefore be made by adopting right methods, as a minimum amount of piping is used if the vacuum tank is erected close to the vacuum pump. The vacuum tank should be fitted as close to the vacuum pump as possible so that all the vacuum piping can be flushed. The tank should be of sufficient capacity to hold the water used in flushing the whole system. If the vacuum tank is fitted with a drainage flap and placed at a reasonable height from the floor the washing of the machine is facilitated, and the tank can be quickly emptied by breaking the vacuum at any part of the machine, this will release the boiling water which has been carried over into the tank. The vacuum can then be again raised and the washing completed.

The electric motor, a vacuum pump, or a vacuum tank are not in themselves a source of contamination to milk or cream, but may become so if neglected, so that these units should be so installed as to be conveniently cleaned. The milk-vat can be suspended from the roof with iron rods, or supported upon a pipe stand set into the floor, or upon hinged wall-brackets. A convenient milk-vat measures 3ft. by 3ft. by 10in. deep, with a fall and a tap towards one corner. The tap should have an extended delivery pipe which can be uncoupled when the milk-vat is full. This will allow the separator to be cleaned during the milking in the flush months of the season. A separator which is too large causes a loss of butterfat in the spring and autumn owing to the milk getting cold before there is sufficient in the vat to warrant starting the separator. Where a pipe stand is used to support this type of milk-vat an adjustable bar or two hooks attached to the stand on the side nearest the door, as shown on the plan, will serve to support a milk-cooler, and if the vat is given a quarter turn the tap will be brought into the right position to deliver the milk on to the cooler.

A glazed drain-pipe of a suitable size set into the concrete floor and filled with concrete makes an excellent stand for a separator. It will be noticed that in the plan a small fixed window is shown in the draught-proof wall. This is recommended, as it has been found to be a decided advantage in the running of the plant and for carrying out herd-testing work, &c.

Where whole milk is being supplied the milk-room can be used as a milk-house, provided that it is kept in a hygienic condition. This avoids the necessity for a milkstand, but the contour of the ground may require the roadway for the delivery truck to be excavated to the doorway (Fig. 1) or a sliding door can be provided in either of the outer walls of the milk-room to suit the fall of the ground. This is being practised by some dairymen who have proved over a period of years that good milk with a low bacterial count can be delivered from a milk-room so constructed. On a level site, or where a sunken ramp is unsuitable, a milk-lift can be used to raise the milk for cooling purposes.

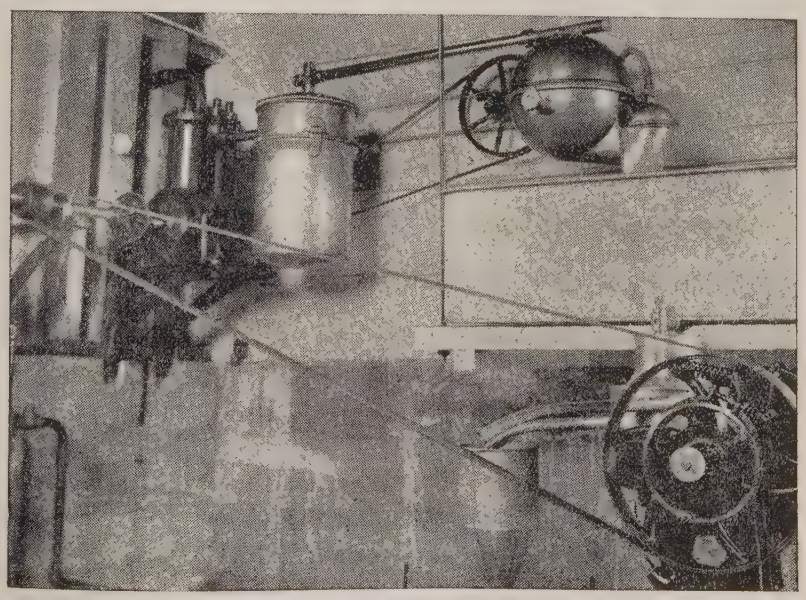


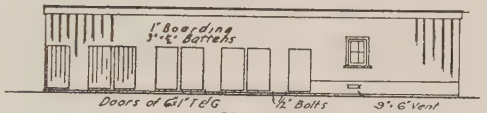
Fig. 4.—Separator-room for cream-supply dairy, showing vacuum pump on wall, vacuum tank close to pump, suspended milk vat and hopper of skim-milk pump. Base of 4 ft. of concrete under walls.

DESIGN FOR WALK-THROUGH MILKING SHED, RACE AND YARDS.

Scales: Plans etc. 1/8" = 1'0"
Details 1/2" = 1'-0"

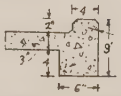
DEPARTMENT OF AGRICULTURE
DAIRY DIVISION

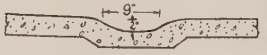
NOTE: NOT FOR TOWN MILK SUPPLY

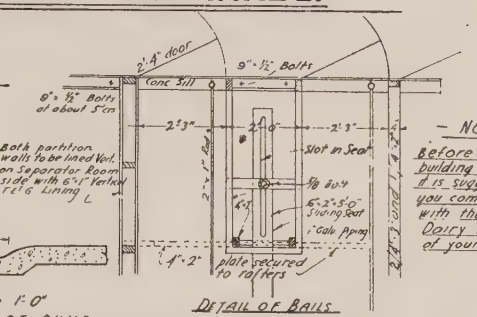


BACK ELEVATION
Race not shown

END ELEVATION

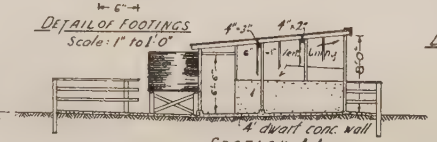






- NOTE -
Before commencing building or renovations it is suggested that you communicate with the Farm Dairy Instructor of your District.

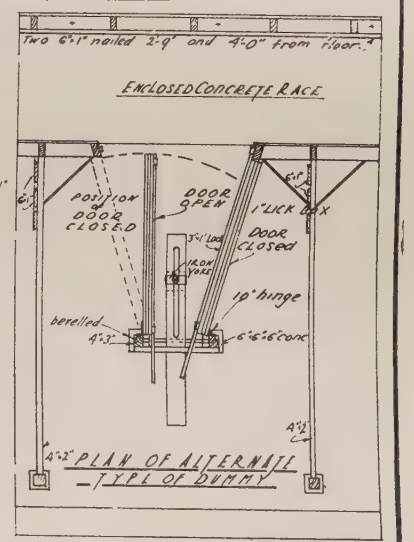
FRONT ELEVATION
(Fence and Gate not shown)



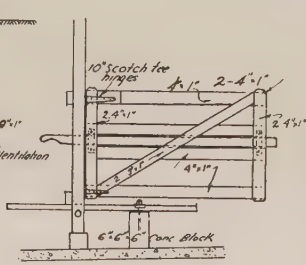
DETAIL OF FOOTINGS
Scale: 1" to 1'0"

SECTION A-A

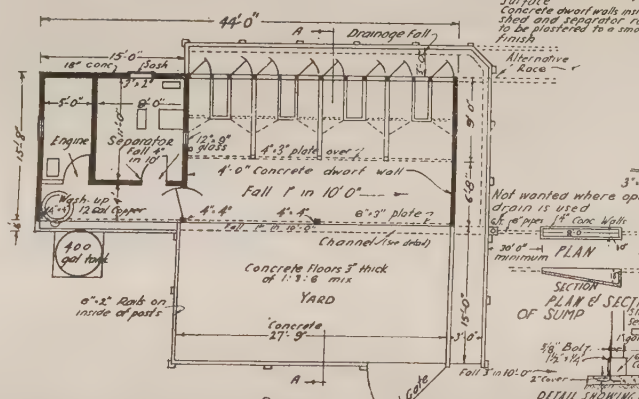
Scale 1" = 1'0"
DETAIL OF SUMP CHANNEL



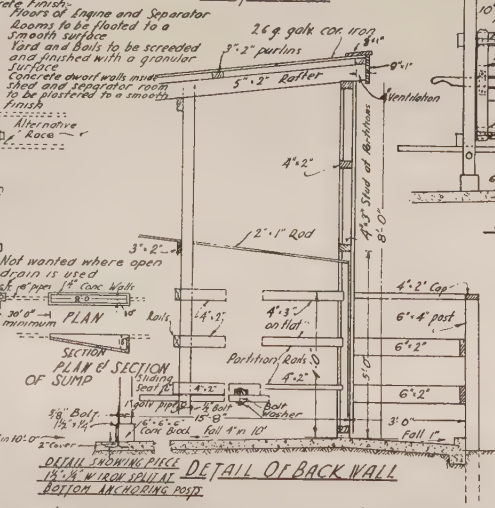
PLAN OF ALTERNATE TYPE OF DUMMY

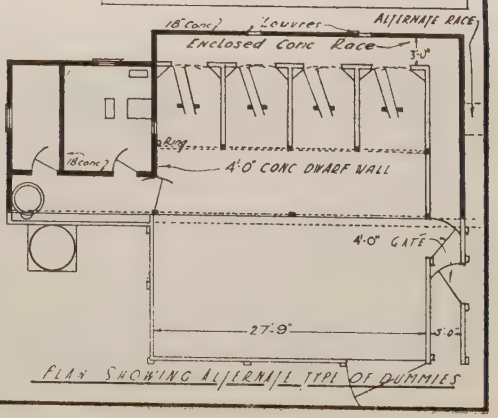


DETAIL OF GATE



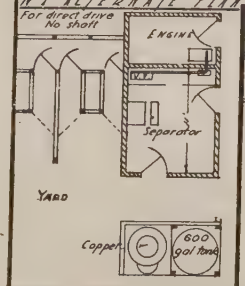
PLAN



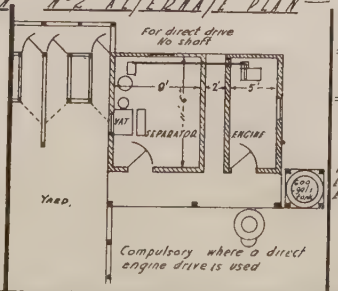


PLAN SHOWING ALTERNATE TYPE OF DUMMIES

N°1 ALTERNATE PLAN
For direct drive No shaft

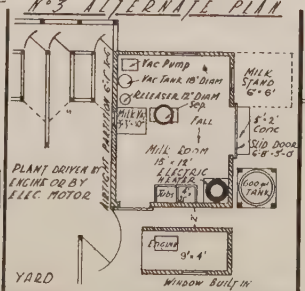


N°2 ALTERNATE PLAN
For direct drive No shaft

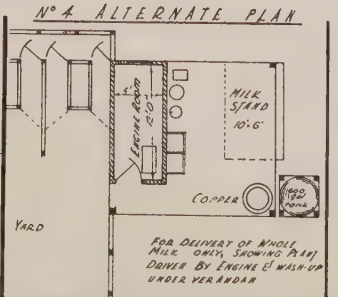


Compulsory where a direct engine drive is used

N°3 ALTERNATE PLAN



N°4 ALTERNATE PLAN



FOR DELIVERY OF WHOLE MILK ONLY, SHOWING PLANT DRIVEN BY ENGINE & WASH-UP UNDER VERANDAH

Water Heating Appliances

The boiling-point of water at sea-level is 212deg. F. An ordinary copper, when properly fitted in and used at each milking, is quite satisfactory for obtaining boiling water, because it can be filled a second time if necessary and the water can be actually boiled. After completing the cleansing of the whole milking plant, &c., a small quantity of water can be put into the copper and, by means of a perforated cover fitted over it, steam can be very cheaply generated to sterilise dairy utensils. The utensils can also be placed in the copper and boiled.

There are various makes of steam generators and waterheaters on the market today, and when properly installed and equipped they are proving highly efficient. Regulations governing the size of electric cylinders and wattage of elements in relation to the various sizes of milking-machines in use are included in the Dairy-produce Regulations 1938, and before installing one the local Farmy Dairy Instructor should be consulted.

Washing-down

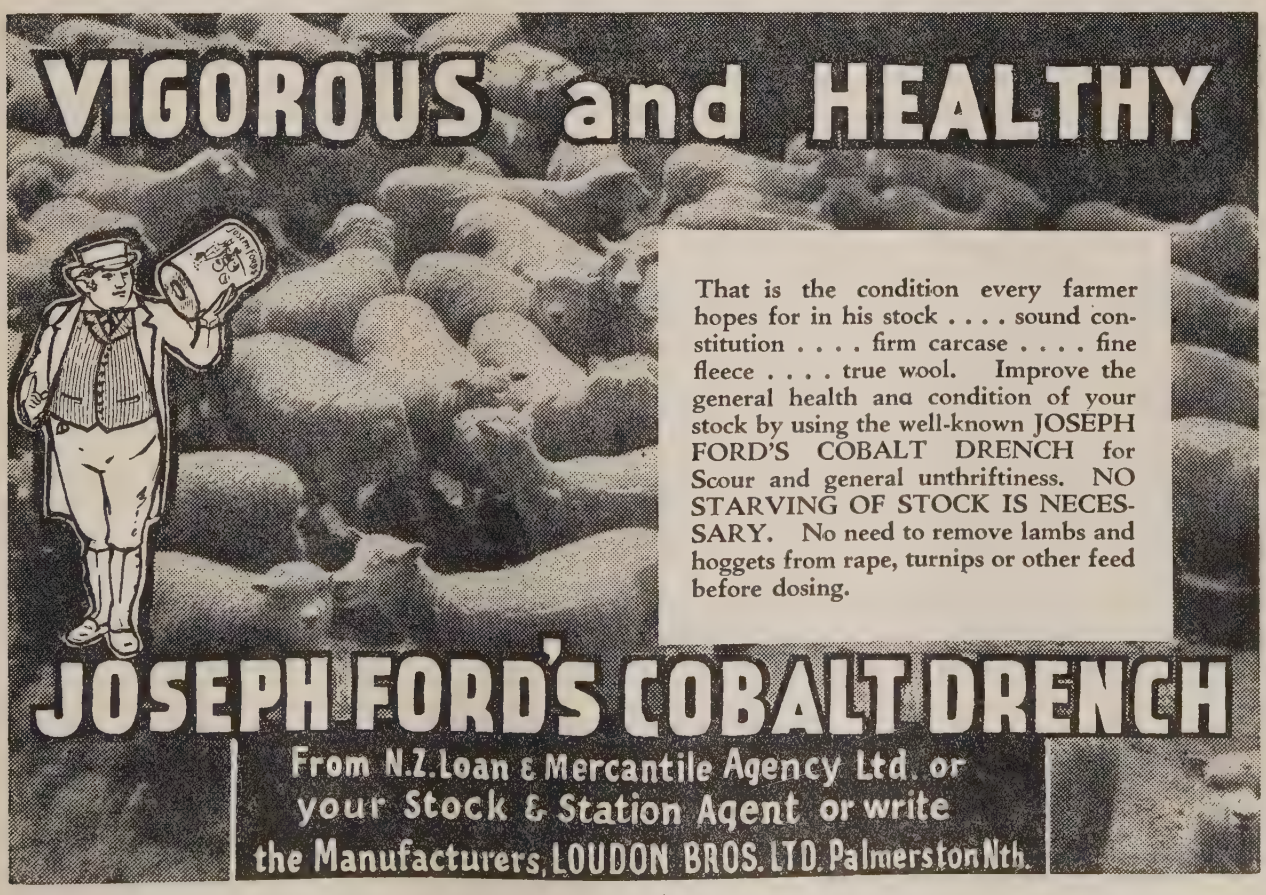
A 600-gallon tank cannot be considered to provide adequate water for all purposes. Where water has to be pumped into a tank it is advisable to place the tank upon a stand at least 12ft. to 14ft. high to obtain pressure for cleansing purposes. A waterpipe at least 1¼in. in diameter should be carried overhead from the tank to a central position in the milking-shed. A fullway cock of the pressure type should be fitted. Connections can be taken off the main water-pipe to supply the various units in the dairy at the points where they are required.

Many farmers have successfully provided a water-connection in each bail, coupled to a short hose for washing cows' udders. The practice is to reduce down from the stop-cock (which is the main sluicing medium) by a series of pipes or connections to a ½in. pipe to which can be fitted a ¾in. rubber hose of any desired length. The end of the rubber hose can be further reduced down by piping to a ¼in. nozzle. Such an arrangement assists in speeding up the cleansing operations, and has proved satisfactory. Some dairymen used a rubber hose as already described, fit two fullway stop-cocks to the delivery pipe of the pump, and use the pump as the pressure medium. This method works well, but care must be taken in the manipulation of the fullway cocks, as one must always be open. A device for assisting to clean the cowyard can be made by boring small holes at every 9in. in a ¾in. pipe, which extends the full width of the yard at gate-entrance and can be merely cemented or supported upon a concrete floor. A controlling tap on the pipe-line can be fitted in a handy position to suit the operator. Some also use this method at the head of the bails. Where high-pressure water is not available an open trough in a handy position and a bucket will give good service. (Fig. 1.)

(To be continued.)

Cobalt Deficiency in Sheep and Cattle

As the result of investigations into the prevention of bush sickness by the use of cobalt, it is now possible to recommend to farmers in the districts concerned, methods by which they can economically prevent the incidence of the disease. These recommendations are made jointly by the Department of Agriculture and the Cawthron Institute, and are available in a bulletin issued free by the Department. Copies may be obtained from the Department's officers in Auckland, Wellington, Christchurch and Dunedin.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Pasture establishment has been prominently before the farming community during the past twenty years. Many theories and innovations have been advanced from time to time, only to be subsequently rejected through some weaknesses in their practical application. Out of the controversy that undoubtedly existed there has been evolved a procedure in laying down pasture that has a wide application throughout the country.

Pasture Establishment on Marine Silts

— By —
C. WALKER,
Instructor in Agriculture,
Thames.

IT is seldom that a progressive farmer will attempt to grass an area without thorough initial preparaparation, though a decade ago it was not uncommon to find an excellent mixture being sown under quite adverse conditions of soil cultivation.

Likewise, the farmer of today, through experience, has learned the wisdom of seeing that his mixture consists of only the best quality seed. Fertiliser will be used, so far as it is permitted by rationing, to ensure the greatest advantage to the young grass crop.

These points are undoubtedly of paramount importance in any work involving the establishment of grass; they are basic principles that are generally applicable to a wide variety of soil and climatic conditions.

While this article is devoted primarily to the question of grassing marine silts, the general procedure will be much the same on other classes of land. Naturally, there will be variations in seed mixtures, in manurial treatment, and perhaps to some extent in cultivation.

Preparation of Area

The area to be selected on the average farm is usually one which has already been in crop, or which is in inferior pasture or natural growth.

If it has not already been ploughed, this work should not be delayed any further unless, of course, where it has baked too hard to permit ploughing. If this is so the first opportunity after softening rains should be taken to get the soil broken up. If ploughing is possible, when the work has been done the area should be immediately disced down, fined down further with a clod crusher, and harrowed. The aim should be to get as fine a seed bed as possible well in advance of actual sowing.

Weed Growth

At this time of the year there will most certainly be a pronounced growth of seedling weeds following this cultivation. These will have to be dealt with from time to time by periodical discings and harrowings. It is not possible to indicate just how often this would need to be done, as much depends upon the weather conditions. In showery weather more seedings will appear than under hot, dry conditions. A certain amount of judgment will therefore be necessary to decide upon the frequency of this work; but the aim should be to thoroughly suppress all weed growth as it appears. By so doing, the subsequent young grass crop will obtain an excellent start without the fierce competition that weeds are capable of exerting. If weeds are permitted to flourish they soon overrun a newly-sown grass area, with the result that the pasture never fills out properly.

Just prior to sowing, which should take place as early in March as possible, the seed-bed should be harrowed and rolled, so as to give fineness and firmness, both of which lead to an excellent "strike."

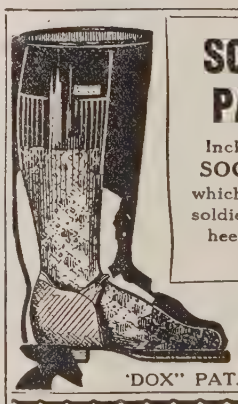
Seed Mixture

Farmers possess quite varied opinions on what should constitute a seed mixture for this class of country. All give ryegrass a prominent place. Some favour paspalum, while others would exclude it at all costs. Some like a fair amount of cocksfoot, while others lean towards timothy and even foxtail.

On the whole, the pastures sown in the past are good; but this may not be entirely due to the mixtures sown. There is a tendency for certain species to become dominant under conditions which suit them. Thus foxtail will thrive under damp conditions, prairie grass under light grazing, danthonia on poor country, and ryegrasses under heavy stocking. On the Hauraki marine silts, stocking has been heavy, so that there has been a tendency under good management for ryegrasses to dominate the swards. Timothy, and cocksfoot are also prominent in the better pastures, while on the weaker pastures browntop and creeping bent are by no means uncommon.

One of the problems on this country since its development has been that of successfully establishing clovers. In conformity with general practice on other good soil types, the first efforts at clover establishment aimed at getting white clover and red clover into the swards. Unfortunately these efforts failed, and, as is common where clovers fail, the grass species lost vigour, and the pastures became quite unproductive.

The reason for this clover defection can be found by a study of the history of these soils. At one time they formed the ocean bed as an extension of the Hauraki Gulf, and during that time became impregnated with saline material. Neither white clover nor red clover will tolerate a very high degree of soil salinity, and therefore, in these soils, they quickly died off, leaving only grass species. The ryegrasses, although tolerant of salt to a certain degree, remained alive but considerably stunted through a lack of nitrogen as supplied by vigorous clovers. It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was then found necessary to introduce strawberry clover in order to induce grass growth, with the result that the pastures today rank in quality with any to be found throughout the Dominion.

Any grass mixture for these marine silts should include a liberal sowing of ryegrasses and some strawberry clover. Other species may be added according to personal inclinations; but the following would constitute an excellent sowing:

Perennial ryegrass ..	25 lb.
Cocksfoot	8 lb.
Timothy	2 lb.
White clover	1 lb.
Strawberry clover ..	2 lb.
Paspalum	6 lb.
	44 lb. per acre.

There will undoubtedly be some who disagree with the inclusion of paspalum, but, under proper control, it is an excellent butterfat producer in the summer and late autumn. Moreover it will thrive in association with other grasses without subduing them if it is kept in control. There may be an objection to having it over the whole farm, but it may be convenient for a few fields on every farm where it could be included.

In setting out the foreging mixture reference to seed quality has purposely been omitted; but wherever a variety is mentioned an effort should be made to get the best strains of that variety. Where the variety is certified this will be a sufficient guarantee of quality, and it should be insisted upon.

Manurial Treatment

Few farmers today require to be reminded of the value of adequately manuring the young grass crop. This is a more important function than the annual topdressing of an old sward. Unfortunately we are not in a position at present to use as much fertiliser as would be desired, but every effort should be made to sow some phosphate with a young grass crop. Even on the marine silt where topdressing is normally regarded as superfluous, it is essential to get some manure to the young pasture. Phosphates in particular are important in establishing rooting systems, and a good root system is the foundation of any pasture plant. On the Hauraki marine silts, therefore, up to 2 cwt. per acre with about 5 cwt. lime as the initial topdressing is suggested.

While this article deals primarily with establishment it would not be out of place to mention two points in the early life of a pasture that require watching.

Firstly, the farmer concerned should not be in too great a hurry to graze it for the first few times, When it appears to be getting away bite it back a little with light stock.

Secondly, do not be tempted to make hay or save seed in the first year. This opens the sward at the time when one should be concentrating on securing dense establishment.

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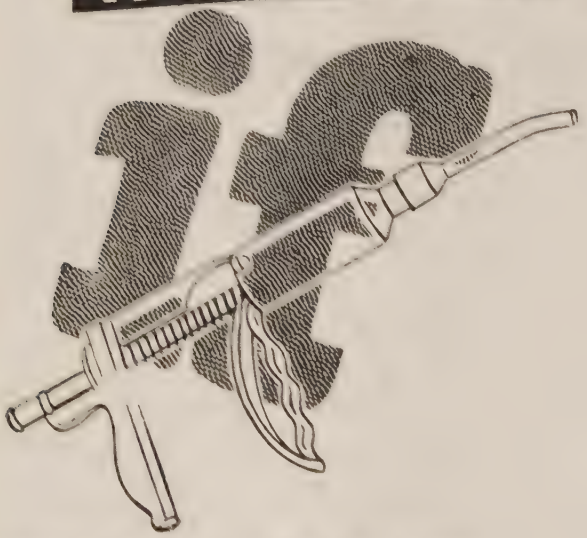

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Veterinary Notes for the Farmer

Staggers in Animals

THE intention of this article is to attempt to clarify, as far as possible, the significance of inco-ordination of movement, which may be termed staggers or staggering, as seen in animals in relation to some frequently met conditions described here.

Staggers or staggering is due to the inability of the affected animal to properly co-ordinate or control its movements, and is associated with many affections at some stage or to some degree. This inability is usually due to a disturbance of the nervous system —brain, spinal cord and nerves— brought about by various causes, each actual cause setting up its own train of symptoms, of which staggering, characteristic or otherwise, is a marked symptom.

Ryegrass Staggers

This form of staggers is occasionally met with in sheep, cattle, and horses during the autumn months. It is more usually found on predominantly rye pastures, hence the name "ryegrass staggers." The actual cause of this disease is unknown. Sheep affected will feed quite normally and unless closely observed nothing unusual may be noticed as long as they are left undisturbed. If disturbed or frightened such as by putting a dog on to them, a number may be seen to quickly develop a peculiar action, drag hind legs on the ground and fall. This condition may continue for some time but complete recovery is the rule.

Beyond a change of feed, if possible, and leaving undisturbed, no treatment is necessary or advised. Cattle and horses may be similarly affected.

Paspalum Staggers

This is due to the ingestion of ergotised paspalum seed heads, and as paspalum is a late seeding grass, will be met with in autumn. This grass may be badly affected with ergot in some seasons causing at least some amount of trouble and inconvenience amongst cattle. Sheep and horses are less likely to be affected because of their grazing habits.

The toxin or poison evolved from these ergotised seeds affects the nervous system, resulting in a swaying, staggering gait. A kind of drunkeness is produced. Some cattle, although already intoxicated, may continue to feed greedily on these seed heads. If much ingested the animal may go down and be unable to rise for some time. Affected run cattle may become aggressive if approached.

The obvious line of treatment is to remove stock from affected areas if possible. Losses directly due to this condition are very rare, recovery following removal to non-paspalum areas.

This ergot poisoning must not be confused with ergot of rye or fescue poisoning. In these latter the symptoms will be inflammation and perhaps sloughing of the extremities such as the feet, ears and tail.

Staggering and nervous symptoms may also be seen in some cases of ragwort poisoning.

Grass Staggers

Taking that disease of dairy cows commonly known as "grass staggers"; a more suitable name might be "spring grass staggers," because it is almost invariably met with on spring feed, the quality rather than the quantity being the influencing factor. When feed commences to grow on well-farmed dairy land in the spring, this disease may occur amongst cows calved from about two weeks to two months, and usually from about June to October. A deficiency of magnesium in the blood stream is found in affected animals, and whilst the cause of this deficiency is not thoroughly understood, the result is frequently a severe disturbance of the nervous system.

In very acute cases of grass staggers no staggering symptoms may be noticed, the animal falling in a fit from which it may or may not recover. In less acute cases great nervousness and jumpiness may be the most pronounced symptom and if interfered with the animal may fall in a fit. Then there is the subacute type showing inco-ordination or staggering, but nervousness may not be pronounced. Again, there is the type that staggers or sways slightly in its movements, this condition probably remaining for some time. In those cases not so acute there may also be a tendency to aimlessly lick various objects or self.

The administration of magnesium sulphate (Epsom salts) by mouth, under the skin, or into the blood stream is recommended in affected cases.

Inco-ordination or staggering is also a symptom of milk fever, which usually occurs within three days or so after calving, the causative factor being a deficiency of calcium in the blood stream. This deficiency again brings about a serious disturbance of the nervous system with consequent staggering movements quickly terminating in complete inability to stand. Coma and death usually follows if left untreated.

The administration of calcium in some form by one of the above-mentioned methods will repair the deficiency and usually effect a cure. Inflation of the udder also gives good results, possibly due to its temporary suppression of secretion of milk in udder, thus making available for the system, calcium otherwise called on in the secretion of milk.

Whilst the foregoing only touches on the more common conditions in which staggering symptoms may be noticed, it may be of help to unravel the "staggers" mix up which seems to exist.

J. MULLINS, M.R.C.V.S.,
Veterinarian, Hamilton.

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Horse in Poor Condition

"A.G." (TAUPIRI):—

I have a six years horse which a veterinarian attended last spring for strangles which had gone internally. The outward signs were a slightly swollen penis and after several weeks of wasting small scabs appeared a few at a time over the legs and body.

I do not question the diagnosing of the veterinarian, but he tells me after having given the horse a bottle of medicine we can do nothing further for him. As the autumn approaches and the horse is very low in condition, I cannot delay any help I might give, and if you can advise me I would be much obliged. The horse is bright, lies about a lot, but rises easily. Condition is very poor.

LIVESTOCK DIVISION:—

It is quite possible a correct diagnosis of strangles was made at the time your horse was affected in the spring. If the strangles abcesses do not appear externally, as a rule affecting the glands of the jaws and throat, then the danger of internal abscesses in a vital organ such as the liver arises. Such internal abscess formation accounts for the wasting and loss of condition, and unfortunately nothing can be done to overcome such abscesses. Frequently an animal affected in this way dies suddenly, and unless a careful post-mortem examination is carried out it is difficult to account for the cause of death.

On the other hand, if we assume that the abscess does not affect a vital organ and may not rupture and bring about sudden death, then the only course open is to endeavour to build up the condition of the animal by extra liberal feeding. If there is any evidence of worms in the animal a worm drench might be given before the extra feeding is commenced.

Some extra feeding such as good quality oaten chaff should be given once or twice daily, depending on the amount and quality of the grazing in the paddock. If oats and bran are available, a small feed twice daily of two parts of oats and one part of bran should prove of considerable value.

If you do not obtain a reasonable response to the extra feeding, then one must realise that it is going to be very difficult to bring about recovery through the use of any medicinal preparation.

Advisory Service on Veterinary Matters.

Farmers are invited to submit inquiries connected with the health of their stock, and the replies will be published under this heading.

Weaned Calves Sucking Each Other

"W.C." (Ngatea):—

I have eight heifer calves, weaned six weeks, and all have been hand fed. All have the habit of sucking each other's udders; could you advise any method to cure this habit?

LIVESTOCK DIVISION:—

This habit of calves is frequently acquired by hand-reared animals leaving the bucket and continuing the sucking of an ear or udder of an adjacent calf immediately after the milk is consumed. To prevent the habit being developed, many owners add a little dry meal to the bucket daily about the time the milk is being finished. The calves require to chew the meal, and thus lose the sucking habit as they finish the food in the bucket.

In your case the habit has been established, and it is more difficult to break now. However, several methods have been adopted to overcome the trouble. The application of some bitter objectionable solution to the udder may overcome the trouble. Apply a dressing of aloes in solution to the udder and teats of each calf, and renew the application from time to time. The very bitter taste of aloes may stop the habit.

Another remedy consists of fitting a head collar to each calf, the noseband of each head collar being fitted with a row of spikes, so that when the animal attempts to suck the spikes irritate the flank to such an extent that the animal will not allow sucking to take place. Either of these methods should assist in evercoming the habit.

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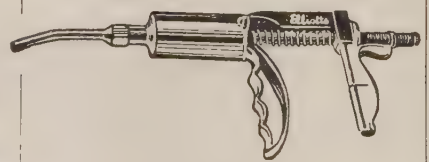
A complete list of agents appears on page 226 of this issue.



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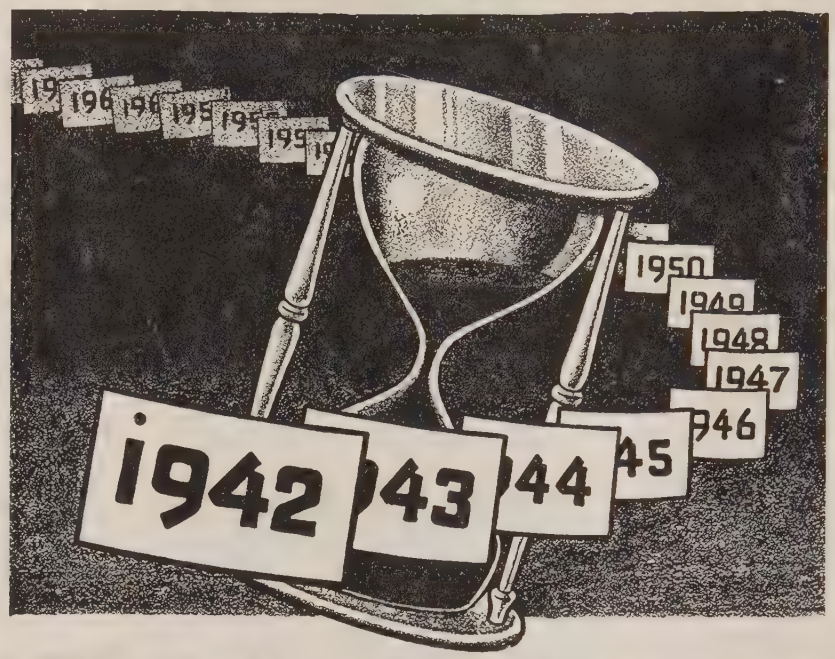

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A Labour Saving Device for Haymaking

WITH labour a limiting factor in many farming operations any new device that reduces the number of men required on any particular job is of great value in maintaining or increasing production. Such an implement to reduce labour in hay and silage making has been built by Messrs. Winter Bros., of Swannanoa, North Canterbury.

This implement may be described as a combination sweep and stacker. As a sweep it will pick up hay out of the sward or windrow, and it may be used equally satisfactorily for silage making. When a load is collected it is hoisted on to the stack or wagon without transferring it to any other implement, resulting in a great saving of time as well as labour.

Construction

The main points of construction will be apparent from a study of the accompanying photographs. A strong metal framework is built round the

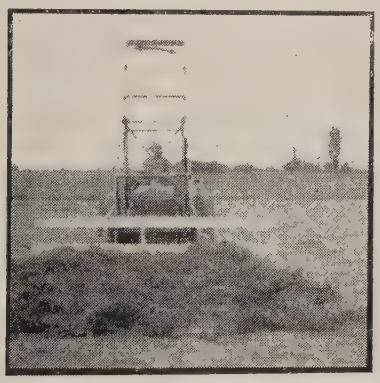

***Fig. 1.*—Used as a sweep this implement will pick up hay or greener material for silage out of the sward, no prior raking into windrows being required.**

tractor and this gives a base for the uprights, the construction of which is clearly seen in the photographs. The long arm, or lever arm, to which the sweep mechanism is attached is hinged to the uprights to allow of an up and down movement when the implement is being used as a stacker.

The "lift" is applied to the lever arm through a system of pulleys and cables working between the rear of the arm and the rear of the tractor; and the power for lifting the load is supplied by a forward movement of

***Fig. 2.*—The anchor wire attached to the stayed peg in the right foreground is here being made fast to the hoisting cable on the tractor.**

the tractor towards the stack or wagon after the end of the cable attached to the lever arm has been made fast to an "anchor" as shown in Fig. 2. As a safety measure two independent cable systems operate the lever arm.

Method of Operation

The usual team employed for haymaking is three men and a boy. One man operates the implement with the assistance of a boy who fastens the cable to the anchor prior to the hoisting of the load on to the stack, and unfastens the same after the delivery of the load. The other two men are engaged on the stack if the hay is to be stacked in the paddock where it was grown; or if it is to be carted for stacking each man builds a load on a wagon.

After collecting a load of hay as in Fig. 1 the driver proceeds to the end of the anchor wire which has previously been adjusted at the correct distance from the wagons. Here the cable attached to the lever arm is made fast to the anchor wire. Fig. 2 shows this operation being performed (a boy normally carries out this work). The tractor then moves forward and the load is hoisted for delivery on to the wagon (Fig. 3). Having reached its peak point as the tractor arrives alongside the wagon, the load is discharged by the release of a trip wire. This phase of the operation is exhibited in Fig. 4. The sweep mechanism is then returned to its normal position by rewinding the trip wire and reversing the tractor to its starting point at the anchor wire.

The load may be delivered with equal ease to either wagon (Fig. 2),

***Fig. 3.*—As the tractor moves forward the load is hoisted for loading on to the wagon. The length of the anchor line is adjusted to give the correct loft when the tractor has reached the unloading point at the wagon.**

and in practice deliveries are made alternately to each wagon. This allows the builders on the wagons time to get their respective loads in order before another delivery arrives. The hay may be delivered to a height of 16 feet on a wagon or stack.

In a large paddock when the material is being carted elsewhere for stacking, the anchor and wagons will be moved to new positions in the paddock in order to reduce the distance travelled in collecting the hay. Nor-

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mally, when the hay is being carted, a number of wagons are hitched together, and when all have been loaded to capacity the tractor takes up its position at the head of the "caravan" and draws the material to the place of stacking. To facilitate this operation the sweep mechanism may be removed to allow of free passage through gates. The removal of the sweep takes a matter of minutes only.

Built on Farm

The entire construction of the implement described above was carried out by Messrs. Winter Bros. on their farm. The metal used was derived mainly

***Fig. 4.*—The operator is here seen releasing the "trip" that discharges the load on to the wagon. The tractor then reverses and the sweep mechanism is lowered to ground level in preparation for the collection of another load.**

from the framework of old motor vehicles, and this, together with the material used in the construction of the sweep and other equipment, was obtained for less than £10. When the hay-making season is over the sweep, together with all the framework, is removed from the tractor. For other odd work in the hay-making season, however, the sweep mechanism alone is removed to allow of easier manipulation of the tractor.

Further Improvements

Messrs. Winter Bros. are not content with the machine in its present form, and they are working to improve it to the stage where the anchor, and the boy attending same, will not be required. To attain this end they are installing a power drive from the tractor for lifting the load. The power drive has the obvious advantage, apart from the saving of time and labour, of allowing the tractor to approach the stack or wagon from any direction and deposit its load at any particular point where it may be desired.

—J. P. BEGGS, Instructor in Agriculture, Rangiora.

HURRY THEM ALONG

Every Railway Wagon is Needed

This year the railways are carrying even more wagonloads of freight than were carried last year. The demand upon rolling stock is tremendous, but there are still enough wagons to do the job, provided that they DO do the job and are not permitted to waste time in sidings, stores and goods sheds. Ten minutes saved from each hour of standstill time would be equivalent to several hundred extra wagons.

Load Quickly — Unload Quickly — Despatch Quickly

Slaughterings of Stock

THE following returns of slaughterings of stock at meat-export slaughterhouses and abattoirs for the months, May, 1942, to February, 1943, have been compiled by the Livestock Division:—

District.	Cattle	Calves	Sheep	Of which Ewes were	Lambs	Pigs
North Island.						
Meat-export Slaughterhouses—						
Auckland	183,805	591,687	256,464	201,959	1,313,756	228,478
Poverty Bay-Hawkes Bay	47,482	56,646	488,835	345,124	1,309,523	19,460
Taranaki-Manawatu ..	82,449	211,637	253,942	204,616	1,147,526	116,460
Wairarapa-Wellington ..	35,972	23,845	249,967	172,297	875,760	23,757
Totals	349,708	883,815	1,249,208	923,996	4,646,565	388,155
Abattoirs	105,625	31,310	494,121	218,740	93,275	107,980
North Island Totals ..	455,333	915,125	1,743,329	1,142,736	4,739,840	496,135
South Island.						
Meat-export Slaughterhouses—						
Nelson-Marlborough ..	1,578	10,723	9,793	5,266	127,098	7,231
Canterbury-Westland ..	11,127	37,184	210,338	163,567	1,393,187	24,888
Otago-Southland	9,611	37,960	96,989	74,890	1,769,275	5,270
Totals	22,316	85,867	317,120	243,723	3,289,560	37,389
Abattoirs	72,258	17,932	343,699	177,747	64,287	37,139
South Island Totals ..	94,574	103,799	660,819	421,470	3,353,847	74,528
Dominion.						
Meat-expt. Slaughterhouses	372,024	969,682	1,566,328	1,167,719	7,936,125	425,544
Abattoirs	177,883	49,242	837,820	396,487	157,562	145,119
Grand Totals	549,907	1,018,924	2,404,148	1,564,206	8,093,687	570,663
Same Period, 1941-42— Meat-export Slaughterhouses and Abattoirs ..	423,916	1,038,402	2,480,957	1,513,473	8,686,801	681,268
Same Period, 1940-41— Meat-export Slaughterhouses and Abattoirs ..	489,923	1,038,212	2,642,138	1,789,258	8,367,571	645,443

Slaughterings of Pigs

The 95,156 pigs slaughtered at meat-works and abattoirs during the month of February, 1943, were distributed in weight ranges, approximttely, as follows:—

Up to 60 lb.	323
61 to 120 lb.	34,983
121 to 160 lb.	49,907
161 to 180 lb.	3,896
Over 180 lb.	4,387
Sundries	1,660
	95,156

The grading of porkers was 95 per cent. of first quality, 5 per cent. of second quality, and that of baconers was 79 per cent. of prime 1's, 16 per cent. of prime 2's, and 5 per cent. of second quality.

In the different weight ranges of baconers the grading was as follows:—

121-160 lb.	80%, 15%, 5% of P1's, P2's and 2nds respectively.
161-180 lb.	66%, 26%, 8% of P1's, P2's and 2nds respectively.

Winton Grazing Trials

By J. W. WOODCOCK, Fields Superintendent, Dunedin, and A. STUART, Instructor in Agriculture, Invercargill.

IN the February and March issues of the "Journal of Agriculture" the results from a trial designed to measure the production from paddocks sown with certified Hawkes Bay ryegrass (Northland fields) as compared with areas sown with Southland ryegrass (Southland fields) were published. Unfortunately, a misprint occurred in that portion of the summary dealing with average percentages of fat lambs from the two areas. As the latter is the crux of the whole investigation the error makes the results appear unduly in favour of the Southland ryegrass. In order to draw proper attention to the necessary correction the correct summary of the four years' results is given below:—

	Northland	Southland
Average carrying capacity, ewes per acre	6.13	5.53
Average lambing percentage ..	104.1%	104.4%
Average percentage of fat lambs	69.8%	81.3%
Average annual returns per acre—		
Fat lambs	£5 18 11	£6 4 6
Store lambs	1 11 8	0 17 6
Wool	2 5 0	1 19 7
	£9 15 7	£9 1 7

Further Experimental Work

In discussing the above trial, the suggestion was made that after the first grazing season a more mixed type of pasture on the Southland areas may have been responsible for a greater percentage of fat lambs. In order to throw further light on this important aspect of grassland farming—and there has in the past been a considerable amount of controversy regarding simple versus complex seed mixtures—a further experiment has been laid down at Winton. On one area there has been sown a simple mixture of 36 lb. pedigree ryegrass and 3 lb. white clover per acre. On a second area a more complex mixture has been sown consisting of 8 lb. pedigree ryegrass, 12 lb. cocksfoot, 5 lb. Italian ryegrass, 5 lb. timothy, 3 lb. dogstail, 3 lb. Montgomery red clover and 3 lb. white clover per acre. While the latter is not by any means a standard mixture it has been designed to give the species other than ryegrass full capacity for establishment. A larger sowing of perennial ryegrass would probably result in this species becoming too aggressive.

Unfortunately, it has not been possible to provide replications in this trial, each treatment consisting of a single area, 2½ acres in extent. These two areas were originally part of the same field, however, and the soil appears extremely even.

The technique of this experiment is being worked as follows:—Soon after lambing a certain number of ewes and lambs is drafted on to each paddock, each lot being as even as possible. Dry sheep are introduced on to each area to clean up any excess feed. The results will be based on the number and weight of fat lambs produced from each area, and the number of grazing days of adult sheep during each season.

Results of the first grazing season are now to hand, but it is not intended to publish them until two or three years' data have been secured, especially in view of the fluctuations in production experienced in the earlier trial.

It is felt that this type of trial, in which actual livestock production is measured, will be more acceptable, particularly to the farming community, than the type of observational experiments conducted hitherto. Unfortunately, it demands more supervision than the farmer can give and hence is not suitable for carrying out on a co-operative scale, but must be confined to either a fully equipped experimental farm or a subsidised area such as the Winton Demonstration Farm. When conditions return to normal, however, the demand for information on various farm problems, particularly those facing farmers in the South, may well warrant an extension of trials such as have been described in this report.

Radio Broadcasts

RADIO talks to farmers will be given from Station 1YA, Auckland, at 7.15 p.m., on the following dates:—

May 13.—"Nutrition of Dairy Stock," by Mr. F. T. Lees, Technician, Animal Research Station, Ruakura.

May 10.—"Poultry-keeping as a Sideline on Dairy Farms," by Mr. E. C. Jarrett, Poultry Instructor, Department of Agriculture, Auckland.

May 17.—"Annual Crops for Dairy Farms," by Mr. C. Walker, Instructor in Agriculture, Department of Agriculture, Thames.

May 24.—"Young Farmers' Clubs' Session." To be arranged by Western Bay of Plenty District Y.F.C. Committee.

May 31.—"Bacteria and the Plant," by Dr. Reid, Ph.D., Bacteriologist, Plant Diseases Station, Auckland.

Pig Industry Broadcasts

UNDER the auspices of the District Pig Councils concerned, broadcasts will be delivered in May as follows:—

1YA, Auckland.—May 20, 7.15 p.m. "Maintenance of Layout," by Norman Carter, Supervisor, Bay of Plenty District Pig Council.

2YA, Wellington.—May 18, 7.35 p.m. "Litter Production," by C. H. M. Sorensen, Supervisor, Taranaki District Pig Council.

2YH, Napier.—May 13, 7.30 p.m. "Litter Production," by Ivan H. Owtram, Supervisor, Tairawhiti District Pig Council.

3YA, Christchurch.—May 20, 7.15 p.m. "Feeding Pigs without Milk," by Hector McIntosh, Supervisor, Canterbury District Pig Council.

Correction

IN the article "Production of Perennial Ryegrass and White Clover Seed," by A. H. Flay featured in the February issue of the Journal of Agriculture the author advises an error which occurred in his manuscript. On page 75 the paragraph reading "Many progressive farmers in the arable farming districts of Canterbury have approximately one-third of their farms in cereals—wheat, oats, and barley; one-third devoted to peas; one-third in certified ryegrass and clover pastures" should read as follows:—**"Many progressive farmers in the arable farming districts of Canterbury have approximately one-third of their farms in cereals—wheat, oats, and barley; one-third devoted to peas, rape, potatoes, green-feeds, new grass, etc.; one-third in certified ryegrass and clover pastures."**

Orchard Notes

Current Work in the Orchard

WITH the bulk of the harvesting completed growers will now be concentrating on the late varieties. As large quantities will be required for cool storage, harvesting of each variety should be speeded up as soon as its correct stage of maturity has been reached. Delay in harvesting Sturmer apples may lead to the incidence of "ripe spot." This disease, which develops and spreads rapidly, has in past seasons caused considerable loss in this variety. Fruit affected with "ripe spot" should not be held in either orchard storage or cool storage as infection is likely to increase. To avoid the multiplicity of minor bruises and grader markings so often found when cases of Sturmers are opened for inspection, careful handling of the fruit is essential. Sufficient toughening of the skin of the fruit to prevent much minor marking may be induced by holding Sturmers two to four days after picking, and before passing them over the grading machine.

Periodical inspections should be made of all orchard stored fruit which should be packed and forwarded to the assembly depot before maturity becomes too advanced for marketing.

Autumn Ploughing

Deep ploughing of the orchard in the autumn is recommended for all but very wet soils, or soils which are likely to scour badly during the winter rains. It is advisable to plough up to the trees, leaving the open furrow in the centre of the rows to facilitate drainage. For very wet soils, or those likely to erode readily, the land should be in green crop all winter. The green crop will act as a de-watering agent and the soil will therefore be in a better physical condition in the spring; erosion will also be prevented.

Manuring

Of the plant nutrients only nitrogen, phosphorus, potassium, and calcium are in general short supply in New Zealand soils. Replenishment of these elements must be made annually if soil fertility is to be maintained at a profitable level. Replenishment is usually made in the form of manures. Manures are classified as nitrogenous, phosphatic, potassic, or combination manures, according to their constituents. Nitrogenous manures include nitrate of soda, sulphate of ammonia, and dried blood. Phosphatic manures include superphosphate, basic slag, rock phosphates, and bonedust. Potassic manures include sulphate of potash, muriate of potash, and potash salts. Combination manures are those which contain more than one of the foregoing elements and include ammoniated superphosphate, blood and bone, meat meal, and fish manure.

Manures are at times classified as artificial manures and organic manures. Artificial manures include nitrate of soda, sulphate of ammonia, superphosphate, rock phosphates, basic slag, sulphate of potash, muriate of potash, and potash salts. Organic manures include dried blood, meat meal, fish meal, guanos, blood and bone, bonedust, wood ashes, animal manure, and plant refuse.

The artificial group are quicker-acting and may be applied where a quick response is required. Organic manures are somewhat slower in action but are generally available over a longer period.

The majority of the manures we have been accustomed to use are now in short supply and are rationed. The quantities which are available are insufficient to meet the needs of growers, and steps should be taken to supplement the manure supply by the growing and turning under of cover crops. Plant refuse provides a complete manure, containing nitrogen, phosphorus, and potassium, and this method of enriching the soil should not be overlooked, particularly at the present time.

With the application of manures, the slower acting phosphates and potash should be spread and ploughed under in the autumn. Nitrogenous manures, especially such soluble ones as nitrate of soda and sulphate of ammonia, should not be applied until the spring.

General Maintenance

As the harvesting season draws to a close there is usually a partially slack time prior to the commencement of pruning operations. Advantage should be taken of this to carry out the necessary work of clearing drains, trimming hedges and shelter belts, and collecting up the orchard cases, repairing damaged ones, and stacking away for the next season's use.

Waterlogged soils during the winter are cold soils in the spring, and cold wet soils may seriously retard spring growth and root development, and upset the normal functions of the trees at fruit setting time, resulting in loss of crop. Drains should be cleaned before the heavy winter rains make this work difficult, and where it is found that insufficient drainage has been provided, new drains should be made.

When the packing operations are concluded, thoroughly clean the grading table and all parts which have come in contact with the fruit. Accumulations of grit and dirt are far easier removed immediately after operations have finished than if left to become hard and dry. Clean up the shed thoroughly, and remove and destroy all reject fruit. Hammer, nails, case liners, and wrapping paper should be gathered up and stored away for the next season. Preparations should be made for the wet-days job during the winter months of overhauling and cleaning the spray outfit, attending to minor repairs, and cleaning of the farm motor truck, cleaning and greasing of farm implements. Many growers take the opportunity during wet days in the winter to give their implements a coat of paint in order to preserve them, and lengthen their working life—all growers would be well advised to follow this sound practice where possible.

—R. G. I. HAMILTON, District Supervisor, Horticulture Division, Auckland.

Two Common Pests

Two of the most common pests of cabbages, rape, turnips, chou moellier, etc., are the white butterfly and the diamond-backed moth. No doubt a good deal of confusion exists among the farming community in regard to the damage caused by the white butterfly and the diamond-backed moth, and injury caused by the latter insect is all too commonly blamed on the white butterfly. The fact that butterflies are seen over a crop is not sufficient evidence for attributing any injury to their presence, and the only way to determine the cause of the injury is to examine the crop.

The differences between the two insects and the type of injury they cause are described in a special bulletin issued free by the Department of Agriculture.

Citrus Pests

IN this month's notes it is proposed to discuss citrus scale insects recorded in New Zealand, their recognition and control. Before doing so, a brief outline of their place in the classification of insects will be given.

Insects are characterised by the following points:—

1. Small size—not more than 3 inches across.
2. Body divided into three segments—head, thorax and abdomen.
3. Body covered by an external non-living cuticle or shell.
4. Three pairs of legs, jointed and attached to the thorax.
5. Wings, if present, also attached to the thorax.

The insect pests recorded in New Zealand can be subdivided into:—

1. Chewing insects.

2. Piercing and sucking insects.

3. Rasping and sucking insects.

1. **Chewing Insects**, by moving their mandibles from side to side actually chew the plant tissues. Citrus chewing insects are Dicky-rice-weevil, *Maleuterpes spinipes*, Leaf-roller-caterpillar, *Tortricid moth spp.*, and Citrus-borer, *Aemona hirta*.

2. **Piercing and Sucking Insects** have the mandibles and maxillae joined to form a proboscis which the insect inserts into the plant tissues and through which it absorbs the sap of the tree. Citrus piercing and sucking insects are: Black aphis (*Aphis citricidus*); Mealy bug (long-tailed) (*Pseudococcus adonidum*); Mealy bug (short-tailed) (*Pseudococcus maritimus*); Circular-black-scale (*Chrysomphalus rossi*); Hemispherical scale (*Saissetia coffeae*); Olive-scale (*Saissetia oleae*); Red-scale (*Aonidiella aurantii*); Hard-wax scale (*Ceroplastes sinensis*); Soft-wax scale (*Ceroplastes destructor*); Cottony cushion scale (*Icerya purchasi*).

3. **Rasping and Sucking Insects** have three sharp horny needle-like organs which rasp the plant tissues and then suck the sap from the wounds. In this category are Thrips, *Heliothrips haemorrhoidalis* and the Red-mite (a spider) *Paratetranychus citri*.

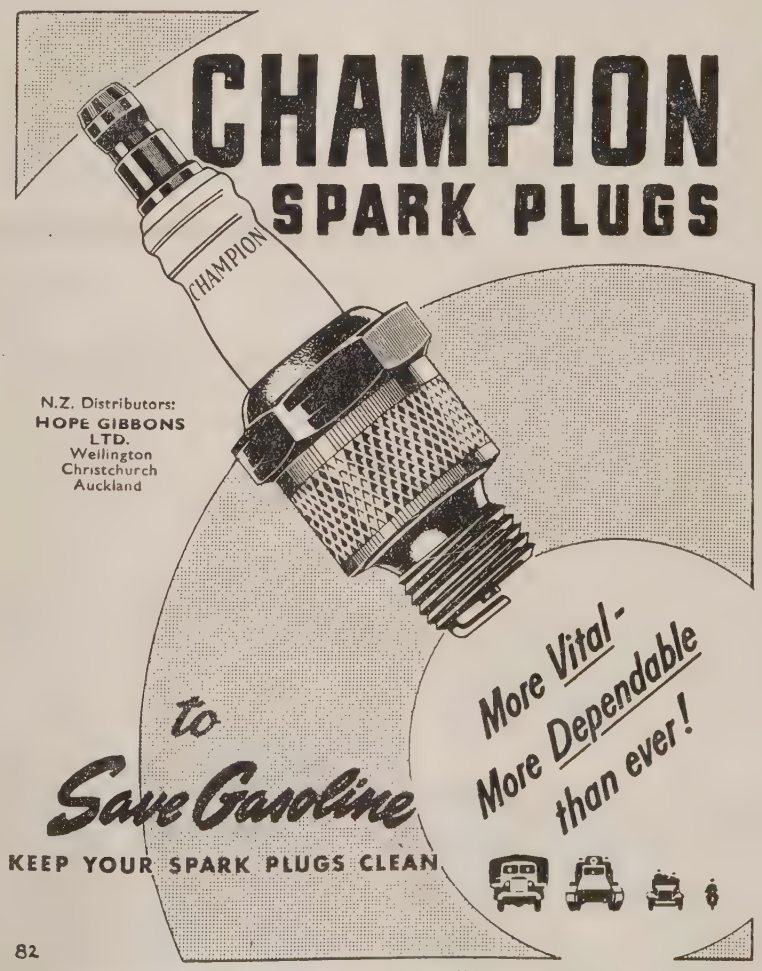
Scale insects are characterised by the fact that the adults have a sedentary habit and either live beneath a scale or have the upper surface thickened with a horny or waxy material. Male scale insects have 1 pair of wings or are wingless; the females are always wingless. Most scale insects lay eggs but the Red-scale, *Aonidiella aurantii*, is viviparous. Scale insects are spread from tree to tree at the "crawler" stage by wind, birds, or by men through transporting infested fruits, prunings, young trees or implements. Rain also washes larvae from the higher to the lower parts of a tree.

Of all the scale insects, the two most serious in their effects on citrus trees are the Hard-wax-scale and the Red-scale.

The Hard-wax-scale, *Ceroplastes sinensis*, is becoming very common and is a serious menace not only to citrus trees, but also to ornamental and native trees and shrubs. The Hard-wax-scale is readily visible and is characterised by:—

1. Its waxy appearance.
2. The thick red blood-like juice it exudes when squeezed.
3. Honey dew being copiously secreted and on this the sooty-mould fungus, *Capnodium citricolum* grows.
4. The star-shaped appearance of the young which may be seen along the main and side veins on the upper surface of the leaves generally in May.
5. The adults being usually found aggregated on the stems.

The Red-scale *Aonidiella aurantii* is relatively small and yellowish to reddish-brown in colour. Unlike the Hard-wax-scale, no honey dew is secreted so the presence of Red-scale cannot be detected by any Sooty-mould. The Red-scale infests the foliage, twigs, trunk and fruits of citrus, being more prevalent on lemon fruits than on the fruits of orange and New Zealand grapefruit. Red-scale thrives on sickly trees and its early detection is very important. The main trunk of a tree may be covered with Red-scale before the branches, twigs or fruits show infection. It may thus occur that an orchard which may appear to be free from Red-scale, is really severely infested and, when conditions are favour-



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able for its development, chiefly in the summer months, the scale will appear with alarming suddenness.

Of the remaining scales the most common is probably the Olive-scale, *Saissetia oleae*, which secretes honey dew like the Hard-wax-scale, and thus indicates its presence by Sooty-mould. When young the Olive-scale is brown in colour; when mature a very dark brown witih a characteristic marking like a raised "H." Other hosts of the Olive-scale include the rose, guava, pear, palm, apple, plum, grape, wisteria, pepper, holly, laurel and camellia.

The Hemispherical-scale *Saissetia coffeae* seldom is associated with Sooty-mould but is similar to the Olive-scale in that an H marking can be seen on the young. This marking, however, disappears at maturity and the adult scale is brown, smooth, shining and highly convex. Hemispherical-scale usually infests young twigs of citrus and also occurs on the oleander, palm and camellia.

The Circular-black-scale, *Chrysomphalus rossi*, is almost jet black and flat, except for a light brownish grey "boss" in the centre. Sooty-mould is not generally associated with this scale which infests orange fruit, the upper and lower surface of other citrus leaves as well as *Eleagnus, Euonymus, Eucalyptus*, oleander and camellia.

The hard-wax-scale, *Ceroplastes sinensis*, is most readily controlled in April and May by the application of a one per cent. certified summer oil.

A. M. W. GREIG, Citriculturist, Wellington.

Cool Storage Notes

Care of Refrigerating Plants

WHEN the cool storage chambers are being rapidly filled with fruit during the harvesting period, many of the refrigerating plants are heavily taxed daily to cope with as much as a 35° reduction of temperature of the incoming fruit. In dealing witih this heavy duty, particularly when the dry battery system of cooling is in use, the cooling pipes become heavily coated with snow or ice which has been formed by the condensation of moisture from the storage atmosphere upon the cold surface of the ammonia piping. This frost accumulation on the pipe surfaces, if not removed by defrosting at regular intervals, has the effect of reducing by from 15% to 25% the rate of heat transfer from the circulating air to the pipe surfaces, as when the cooling pipes are coated with a ring of snow or ice the previous rapid evaporation of the refrigerant within the pipes gives place to a slow or retarded one. Regular attention to defrosting these pipes will maintain them at their full cooling efficiency, and save labour and power costs for running the refrigerating plant.

Where the direct expansion ceiling system of cooling is in use, in which the cooling pipes are open spaced and distributed evenly overhead in the chambers with trays suspended from the pipes to drain away the condensed moisture from the storage atmosphere which drips from the pipe surfaces, the frost does not accumulate on the pipes or in the drip trays unless temperatures lower than 33° F. are maintained. This is due to the position, and open-spaced formation of the cooling pipe circuits which are placed at a point near the ceiling of the chamber, where the lighter warmer layer of air is constantly coming in contact with the cooling pipe surfaces. When the refrigerating plant is not in operation each day, the frost quickly disappears from the pipes and is drained away. In maintaining lower temperatures of 29° to 32° F. for pear storage, special defrosting connections and equipment are necessary for defrosting the pipes and drip trays at regular intervals, particularly during the harvesting period when warm fruit is being received for storage. By the use of the direct system of cooling, storage temperatures and the relative humidity of the atmosphere may be controlled with the minimum amount of fluctuation.

Attention should be given to the purging of air and foreign gases from the ammonia condensor at regular intervals, and the oil separator should be constantly drained of oil and weak ammonia liquid. The refrigerating plant should be kept fully charged with ammonia.

—A. A. POWELL, Cool Storage Officer, Wellington.

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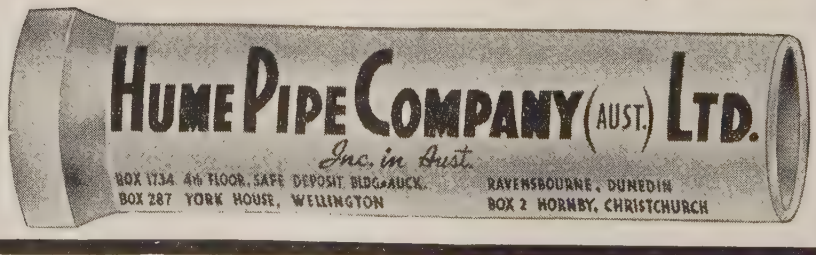
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Guide for the Home Garden

Work in the Home Garden for May

WHAT is generally termed the "dormant season" in the "home garden" is fast approaching, and there will soon be little else to do but to pay due attention to the few remaining crops, prepare for the spring activities, and make some retrospective ruminations concerning the crops which were grown during the past season. The errors committed, and the reasons which may have been noted for crop failures, can be turned to future advantage—provided one is prepared to learn from experience, which is sometimes costly.

Seed

In seed production, strenuous efforts are being made, not only to produce within the Dominion the increased quantity of seed necessary to meet the exceptionally heavy and increasing demand; but also to maintain the desirable high quality. The ideal may be difficult of attainment, but due allowance should be made for all the disadvantages under which production is being carried on.

Seed for next season's gardening operations should be purchased as soon as new supplies are available. While it is not possible to test for strain or type without growing plants to maturity, seed germination tests can and should be made. If only to prevent disappointment when planting time comes round, it is desirable to carry these out at the earliest convenient opportunity.

Seeds of carrot, parsnip, lettuce, beet, cabbage, cauliflower, etc., can all be tested for germination quality in one seedling box, and at the same time. To do this, a seedling box should be filled with a reasonably good potting soil, pressing it well down round the sides as well as at the corners, and levelling it off by dragging a small board along the top of the box. The soil should then be gently but firmly pressed down, and shallow drills made by pressing a piece of ¼-inch timber into it. Into these drills 25 seeds of each variety of vegetables it is desired to test may be placed and covered with a mixture of the soil used in the box, preferably put through a fine sieve and pressed down on top of the seed. The soil should be covered with a piece of newspaper, and, if obtainable, a sheet of glass. It can be placed in a warm, shady place—at this time of the year an out-house is preferable—and a sharp look out kept for the appearance of the young seedlings. As soon as these are observed the covering should be removed. When the number of the strongest seedlings has been noted, this should be multiplied by 4, and the result will represent the percentage germination. This percentage will be the best guide for future sowings. If it is good, less seed may be sown to meet the necessary requirements. There are other means by which seed germination percentages may be obtained; but the method described above is the nearest to actual field or garden conditions.

Soil

Soil as it is generally recognised is the top layer of the earth's crust, of varying depths, which is utilised in agriculture for the production of crops. It is principally in this material that plant roots search for and obtain the nutrients which are necessary for plant growth and development. As vegetable plants may be considered shallow rooting, it is logical to conclude that within the top layer of soil there must be the essential foods in adequate quantities, and in the necessary condition and combination to supply the demands which various vegetable plants may make on it.

The common idea that a chemical analysis is the magic wand which can reveal the fertile condition of soil has been proved erroneous. This form of analysis may determine the quantity of certain plant foods in the soil, but it fails to indicate whether these are in a condition in which they may be assimilated by growing plants. Availability of plant nutrients depends largely upon factors to which, in a chemical analysis, no consideration is given. Soil texture, rainfall, drainage, to mention only a few of the factors referred to, have a direct influence upon the availability of plant foods which the soil may contain. The difficulty of distinguishing between the total plant nutrient content of the soil and the quantity which may be in an available form is now generally recognised.

The "law of diminishing returns" constitutes the vegetable grower's best and safest guide as to the poor or fertile condition of his land. Observation of the condition of crops while in process of development will indicate in a general way the absence or presence of certain necessary elements in the soil. Crop responses are usually the grower's most reliable guide for fertiliser applications.

Digging

Before digging operations are started, home gardeners may profit by paying particular attention to the opening remarks dealing with soils. The object of the statements made is to ensure that, in the process of turning over the soil, the **top or fertile layer is not placed under the subsoil and the latter brought to the surface.** If this should happen the benefits which the following crop might have obtained from the dark-coloured top soil will not be available. The subsoil should remain as such; but if of a clayey texture can be broken up so that drainage of surplus water will not be prevented. This deep digging—bastard trenching—is one of the secrets of success in home garden production of vegetables. An hour or two of extra labour utilised in work of this kind will be amply repaid by results in both quantity and quality of produce grown.

Late April and May is an opportune time for autumn digging. If the garden land is sloping, the soil should, when turned over, be allowed to remain in a rough unbroken condition, and the steeper the grade the rougher the state in which it may be left. As steeply-graded land is quickly drained by the almost immediate run-off of surplus rain, the rough soil will tend to absorb this and store it for use during spring and early summer. Autumn digging improves the physical condition of the soil, and organic matter turned under at this time will decay more rapidly and be of greater benefit to succeeding early crops. Provided it is not unduly delayed, it will also be the means of destroying insect pests which hibernate in the soil.

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Ridging

This practice refers to "throwing" the soil up into elevations running the length of the section of garden being so treated. By this means the greatest amount of soil surface becomes exposed to the action of the varying atmospheric conditions obtaining during the winter months, and "weathering" takes place. The result of this weathering will be that the soil becomes more friable, more easily reduced to the desirable tilth, and will permit of earlier planting in an improved plant environment.

Lime

When the soil has been ridged, advantage should be taken of the opportunity to make an application of carbonate of lime, commonly termed agricultural lime. This is lime in its unburnt condition, and is usually yellowish-brown in colour. Lime must not be understood to be a fertiliser, but it should be noted that calcium, the most important element contained in lime, is necessary for the healthy and sustained growth of all vegetable plants. Its real value as to the part it plays with regard to the conversion to availability of plant nutrients which may become "locked" up in the soil is now widely recognised. On the cultivated soil of the home garden an annual dressing of about 3 oz. per square yard will provide the necessary "sweetening" requirements, and prevent the development of undesirable acid conditions.

Such acid conditions may, and sometimes do, affect the growth and proper development of vegetable crops. The following vegetables are considered relatively sensitive to soil acidity:—Asparagus, beet, cabbage, cauliflower, cucumber, lettuce, melon, onion, parsnip, pea, rhubarb, spinach. Soils sometimes reach a condition when, through the lack of calcium, plant response to fertiliser applications becomes negligible.

Garden Refuse

In the cleaning up of garden refuse it is not always commendable practice to dig it into the soil, or incorporate it in the compost heap. Injurious fungi and bacteria may in this manner be increased and retained in the soil for further attacks upon succeeding vegetable crops.

Tomatoes

This crop is of such domestic and economic importance that no chances should be taken which might prove inimical to future production. In favourable localities some fruit may still be saved for use if picked undamaged when mature, and placed in a comfortable outbuilding on a bed of dry straw, hay, or manuka twigs. When the spent vines are finally dug, not pulled out of the ground they should be hung up somewhere to dry thoroughly before burning them. Destruction of tomato vines by other means is rarely as effective in the eradication of diseases and insect pests.

Cabbage

Particular care is necessary with regard to the disposal of the large leaves of this vegetable. There is a fungous disease which may be recognised by the appearance on the large outside leaves of pale yellowish spots, which ultimately develop into large blotches; the disease seldom penetrates the heart of the cabbage. Care is necessary to distinguish this disease from the natural decay which follows maturity. These diseased leaves should never be dug into the garden or put in the compost heap, unless high temperatures are generated in the heap or the product is sterilised before being used on the garden. The same recommendations can be made with regard to all garden refuse. The compost heap may easily become a convenient instrument for the dissemination of innumerable forms of vegetable diseases.

Leeks

This valuable winter vegetable will require attention, principally weeding and maintaining the soil "banking" on the stems which is necessary for blanching the edible part of the leek. When working this crop, which is a closely-planted one, it is better to remove the weeds by hand rather than hoe them out. Hoeing during this season of the year, when the rainfall is usually high, may be only another means of transplanting the weeds. It is better to throw them into a tin when the operation is being carried out, and subsequently disposed of on the compost heap or buried in the garden. There they will rot and be of some use; left on the surface they rarely die. Weekly applications of liquid manure must not be neglected.

Brussels sprouts should be carefully examined for the condition of the "buttons." If these show signs of becoming loose or flabby during development, applications of liquid nitrogenous fertilisers should be discontinued. While this fertiliser will tend to stimulate necessary growth during the cooler month of the year, excess quantities may prove injurious. Sprouts should be compact and tight, with the wrapper leaves closely binding the centre.

Broccoli will also require attention as curds of the early varieties may be beginning to form. Although most of the modern strains of broccoli are self-protecting, it is necessary to make sure that the forming heads are adequately protected from light and unfavourable weather. Tying or binding the leaves, as practised with cauliflower, is rarely done with broccoli. Sufficient protection is usually afforded either by breaking off several of the outside leaves and laying them on top of the developing curd, or by snapping, without severing, and bending them across the inside of the plant.

Parsley.—This vegetable, which was recently commented upon in this journal, has recently come into prominence in Great Britain, and the discovery may be of more than passing interest, not only to home gardeners, but to those who may be responsible for the maintenance of the health of our armed forces overseas.

Dr. E. J. Morgan (Biochemical Laboratory, Cambridge, England) has published some interesting data concerning parsley. It is reported to be rich in vitamin C, the anti-scorbutic factor. The ascorbic acid content for picked leaves of parsley, grown in Cambridge, it is stated, stood at the average figure of 279.51 mgm. per 100 gm., which places it in the forefront of anti-scorbutics. It is estimated by Dr. Morgan that ½ oz. of parsley eaten daily will give adequate vitamin C protection to the average person. In order to prevent loss when being prepared for use, it is necessary to chop it when perfectly dry with a stainless steel knife.

—D. K. PRITCHARD, Instructor in Vegetable Culture, Wellington.

APRIL REPORT—

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Seasonal Work for Beekeepers

Apiary Management

IN the management of bees there are four distinct periods. These are known as autumn, winter, spring, and harvest periods, all very closely interrelated. The main goal which the beekeeper strives to attain during the spring period is to have at the beginning of the main honey flow an enormous worker bee population in each colony, while the harvest period has to do with the manipulation of combs and supers so that the maximum honey crop may be harvested.

At the present time of the year (autumn), hive manipulations should be directed so that all colonies eventually winter in one or two-hive storeys with plenty of stores and young bees.

Wet Extracting Combs

Where the work of extracting and wintering down has not yet been completed, no attempt should be made at this time of the year to place wet combs back on the hives for cleaning up purposes during the daytime. This work should be left until the late evening, and completed as quietly and quickly as possible to prevent undue disturbance of the bees. The cessation of the nectar flow in the autumn when the colonies are strong leaves a large force of field bees with no work to do; consequently any undue disturbance of the hives at this time would cause the bees to become vicious and troublesome to the beekeeper.

Until the surplus field bees die off they will quickly attack and rob any weak or unprotected colonies. Queenless colonies fall easy victims to robber bees in the autumn, and care should be taken to unite them, also to unite any weak colonies with old or worn-out queens to medium or strong queen-right colonies in the apiary as soon as possible after the close of the main honey flow.

Protection From Winds

It is not possible to provide the bees with fixed temperatures, nor do they require it. Provided the hives are reasonably sheltered from cold winds, and all hive parts are rainproof and close fitting, the bees are quite capable of generating sufficient heat within the winter cluster, and also retaining the correct temperatures under changing weather conditions where they have adequate stores. All the bees require is reasonable care with as little disturbance as possible for successful wintering. Any attempt at providing artificial warmth would induce brood rearing at a time when such activity is not desirable. This would cause a heavy consumption of stores which could be ill afforded, and would not allow the queens the rest they require if they are to be of service throughout the following season.

The main points to observe at this time of the year are:—

Where there is further apiary work to be completed the entrance to each hive should be reduced to prevent robbing.

All empty supers with dry combs should be removed from the tops of the hives and stored away from wax moth.

(*Continued on page 241*)

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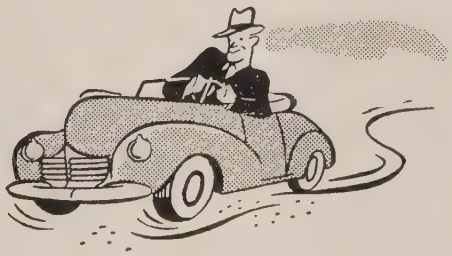

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GOODYEAR TYRES

Soaked Wheat Feeding For Poultry

By F. C. BOBBY,
Superintendent of Poultry Husbandry,
Wellington.

ALTHOUGH by no means a new system of feeding, soaked wheat feeding is attracting interest in New Zealand today. The feeding of both soaked and sprouted wheat has received considerable attention in Australian poultry papers, a variety of claims being made regarding the merits of the two systems. It is intended, however, to restrict this article to an account of soaked wheat feeding, since, taking New Zealand as a whole, it is difficult to provide sprouted wheat throughout the year without some special conditions to give the requisite temperature for "sprouting" during winter months.

It may be stated without hesitation that this system of feeding is being used with complete success on certain commercial poultry-farms in the Dominion. Where wheat is readily available, either as a home-grown product or purchased at an economic price, there is much to recommend the system, more particularly during the present war-time conditions when supplies of pollard and bran are less consistent than in normal times.

Retains Condition

From observations of this system made under practical and commercial conditions, it may be stated that high egg production can be obtained with good laying stock, while the condition of the birds so fed remains entirely satisfactory. In particular, soaked wheat feeding has proved beneficial to breeding stock. Breeding birds appear to retain a good "hard" condition without showing any tendency to put on fat, even in their second or third breeding season. This, it will be agreed, is an important point, since over-fatness in a breeder will often be reflected in poor incubation results. Although the price of wheat exceeds that of pollard and bran, it is necessary to take into consideration the fact that food consumption is lower with soaked wheat feeding, while in any case meals form only half the ration of a bird.

A certain number of poultrymen who have tried the system claim that it is not satisfactory. In all cases investigated there have been definite indications that a fault in the method of feeding has existed, thereby throwing doubt upon the claim that the system is unsatisfactory. It appears, therefore, that the system should be carried out with care and accuracy, although it is a simple method of feeding. The following is a description of the method employed upon a farm where soaked wheat feeding has proved highly successful.

Feeding Method

The wheat is soaked in metal drums or wooden tubs fitted with taps near the base to draw off surplus water at the end of the period of soaking. Wheat required for one feed is placed in the tubs, completely covered with water, and allowed to soak for 36 hours before being fed. Since the birds are fed twice daily with soaked wheat, it will be found necessary to have three tubs, or three sets of tubs for soaking, according to the size of the tubs and the flock to be fed. Each soaking is completely cleaned up at one feed and not allowed to stand over for a subsequent feed.

After drawing off the surplus water from a tub, 8 per cent. of meat-meal and 2 per cent. of minerals are thoroughly mixed in with the wet wheat. To this mixture is added 10 per cent. of bran, which, when well mixed, renders the whole partially dry and palatable for feeding purposes. All percentages mentioned are by weight and not by measure. The total mixture is, therefore, as follows:—

	lb. or per cent.
Wheat (dry before soaking) ..	80
Bran	10
Meat-meal	8
*Minerals	2
	100 lb.

*The minerals may consist of 1 lb. common salt and 1 lb. limestone or oyster-shell flour.

The allowance for every 100 laying birds at each of two meals per day is 8 lb. of wheat (dry before soaking). This allows about 3 ounces of the total mixture per bird daily. Soaked grain is therefore fed in the early morning and late afternoon, with a light feed (approximately half an ounce per bird or 3 lb. per 100 birds) of **hard** grain at midday. This midday grain feed may be barley or maize, and serves to supply the bird with a solid food upon which the gizzard muscles may work, and thereby be maintained in their normal hard condition. The only additions fed are the usual regular supplies of green food, oyster-shell, metal grit, and water.

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If it is intended to feed growing stock after 6-8 weeks by this system, then the procedure is similar, with one exception, the meat-meal must be reduced to 3 or 4 lb. per 100 lb. of mixture. Thus, 85 lb. wheat, 10 lb. bran, **3 lb. meat-meal**, and 2 lb. minerals would be suitable for birds while growing. Obviously, the amount of the soaked mixture used at each meal will vary according to the age of the birds being fed.

Curd-Feeding

On dairy-farms where skim-milk is available during many months of the year, curds may be prepared and fed to poultry with pollard, maize-meal, and chaffed green food. Since the proportions of pollard and maize-meal required are far less than for an ordinary laying mash, eggs may be produced at a considerably reduced cost. It is not possible within the limits of this article to discuss the system in detail, but those interested are recommended to write to the Department of Agriculture for a pamphlet setting out the exact procedure of feeding.

Health of Poultry

TO recognise disease in the early stages and to know how to maintain the health of birds is essential to successful poultry keeping. The following **free bulletins** may be obobtained from the Department of Agriculture, Wellington, Auckland, Christchurch and Dunedin: "Internal Parasites in Poultry," "Coccidiosis in Poultry," and "Pullorum Disease, or Bacillary White Diarrhoea of Chicks."

APIARY MANAGEMENT—

Continued from page 239.

Where extra combs of honey for winter stores are required they should not be placed in the hives until the warm autumn days have passed.

Do not attempt to winter bees on solid combs of honey with no empty comb space in the brood nest for the comfort of the winter cluster of bees.

Clear away all long growth around the hives to prevent dampness during the winter months, and supply each hive with one or two good dry mats.

With plenty of stores, young bees, and a good queen, few colonies will need any further attention until August or September, according to location, provided the hives are clean and dry, and are protected from prevailing winds.

—T. S. WINTER, Senior Apiary Instructor, Wellington.

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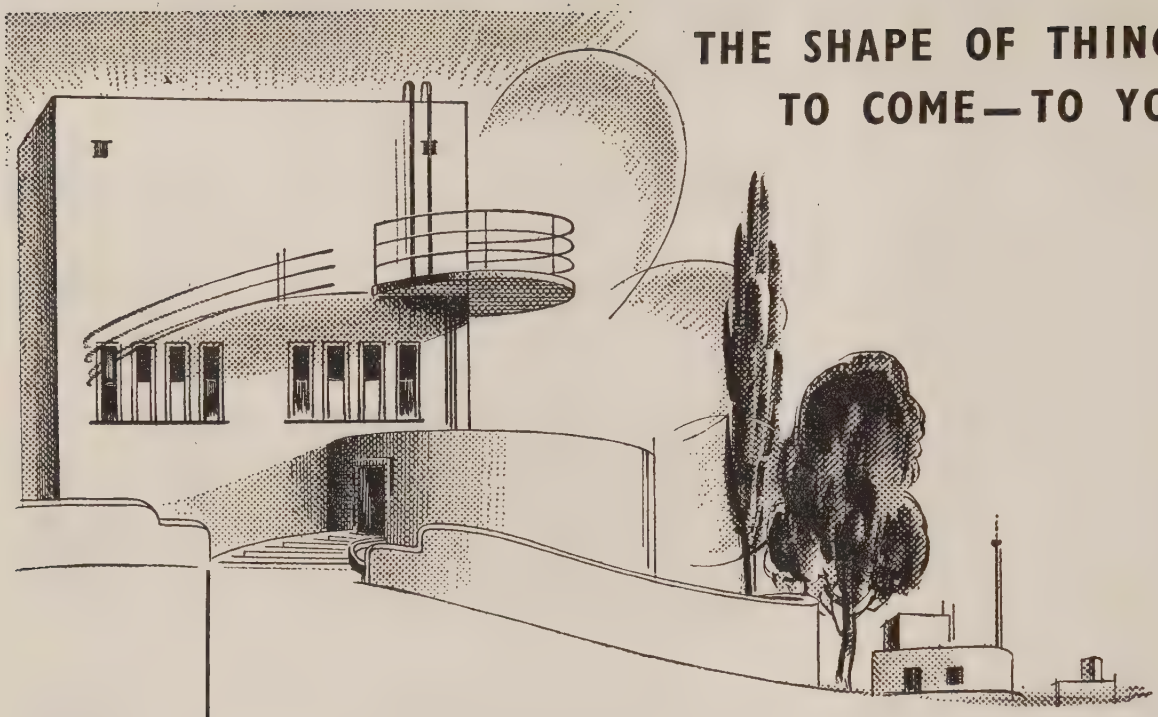

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Federation of Young Farmers' Clubs

Y.F.C. Leadership Campaign

AT the eighth annual general meeting of the Federation, held at Dunedin on July 1st last, a remit was brought forward by the Otago-Southland Council as follows: "That, recognising the national importance of the farming community making its full contribution to the leadership and development of the Dominion, this conference urges all Y.F.C. Councils, District Committees and clubs, to do their part towards developing the qualities in the individual so essential if this aim is to be achieved."

The remit was proposed by Mr. A. C. Cameron, past president of the Federation, and seconded by Mr. R. J. Reid, chairman of the Otago-Southland Council. During the lengthy discussion which followed all speakers were of the opinion that something should be done in the direction of implementing the ideas contained in the remit, but realised the difficulty of evolving tangible means whereby the results could be attained. Mr. Cameron was congratulated on the able manner in which he had sponsored the remit, which he stated was inspired by the significance of a statement made by Mr. L. J. Wild, president of the Royal Agricultural Society, to the effect that leadership in agricultural circles during the past twenty-five years had drifted away from the farmers themselves. This statement and Mr. Wild's amplifying remarks had been endorsed by responsible bodies and leading newspapers throughout New Zealand, some papers asserting that what Mr. Wild had said of agricultural circles also applied to other sections of the community.

A sub-committee, consisting of Messrs. A. C. Cameron (convenor), R. J. Reid, S. A. La Roche, A. C. Laery and S. R. Whyte, was set up to go into ways and means whereby the ideas expressed in the remit could best be carried out. The sub-committee's report, later presented to the Dominion Executive Committee, was particularly valuable and illuminating, and it is anticipated that steps will be taken in the near future to launch a "Leadership Campaign" throughout the Y.F.C. organisation on the lines advocated in the report.

Reasons for Campaign

In stressing the need of such a campaign the report gives a reminder of the many lives lost during the last war, representing the cream of the manhood of this country, the community being the poorer for their absence to-day; it must be admitted that the same thing is likely to happen to this generation. It therefore behoves our own movement in particular to exert itself to develop leadership amongst those of its members whose contribution to the war effort lies in the primary production of New Zealand, and amongst those who are not yet of military age. There appears to be a prevailing tendency for all sections of the community to take their opinions from the radio, the headlines in the press, or from the man in the street, rather than to think matters out for themselves. Democracy can only survive with the development of the critical and scientific attitude of mind towards all social problems. The report further suggests that it is abundantly clear in many clubs that leadership is conspicuous by its absence. There is a tendency to lean too much on the advisory members and the Field Officers of the Department of Agriculture. In many cases where one or two moving spirits of the club have left to go on active service the enthusiasm has languished and the clubs have gone into recess, no real attempt having been made by the remaining members to carry on. The report condemns the irresponsibility and general unwillingness to undertake community service which is, unfortunately, too prevalent to-day—an attitude which saps the very foundations of our democracy, and one which the Y.F.C. movement should set itself out to combat.

Recommendations

The following are the practical measures recommended by the sub-committee to be given effect to in the endeavour to develop leadership ability and to instil a fitting sense of responsibility in club members:

1. **Responsibilities of Club Membership.**—Training and experience are as necessary in the development of the qualities of leadership, dependability, loyalty, and initiative in the individual as are heredity or latent ability. Many club members have latent ability which is never developed because they are not called upon to break down the initial handicap of self-consciousness or shyness by insistence upon their taking a definite part in the conduct of the club's activities. All members should be given tasks involving the taking of definite responsibility for something

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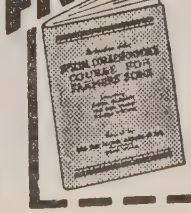

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in connection with the running of the club. This may take several forms:

(a) Arranging the programme.

(b) A talk, demonstration or other club activity.

(c) Opening up the place of meeting, arranging supper, etc.

(d) Publicity, or sending out notices of meeting, etc.

(e) The preparation of papers on social and farming problems.

(d) Proposing votes of thanks, introducing speakers, etc.

The more definite the jobs that can be delegated in this connection, the more the interest—and responsibility—can be spread. Members should seek all the experience they can.

2. **Responsibilities of Citizenship.**—By giving effect to No. 1 the first steps towards realisation of the duty to one's fellow citizens and to the community as a whole will be achieved. Foster something along the lines of the Rotary ideal, "Service before Self," by example and by word that when an individual helps his fellow man he also gains something more than he has given.

Taking Office on Other Bodies. such as Farmers' Union, A. P. Associations, Boys' and Girls' Agricultural Clubs, Veterinary Associations, School Committees, Collie Dog Clubs, Debating Societies, Amenities or Beautifying Societies, etc. Endeavour to produce suitable types for various bodies by training given within the club. Inculcate the idea of accepting responsibility on other bodies; Y.F.C. members, without being precocious, should be active members of such bodies and not merely observers, gaining respect for the club and its members from other sections of the community. There is the matter of a suitable approach being made to the bodies suggested above; and there should be an avoidance of the growth of a system whereby the same few members are appointed to all bodies. Make it a privilege and a duty to serve.

3. **Offering a Trophy, etc.**—It is suggested that Councils, through District Committees, urge that clubs make towards the end of each year (31st March) an award to the active member showing the greatest dependability, initiative and resource during the year. Such award to consist of a trophy (such as an appropriate book), or certificate suitably inscribed. Such awards to be forwarded to the Council and, after approval, placed on a permanent list in the records.

4. **Syllabus.**—Make the preparation of the syllabus the first job following the election of officers for the ensuing year. Avoid the haphazard system of deciding each club night the programme for the next meeting. Develop a well-balanced syllabus so that there is a happy medium between farming subjects and those tending towards cultural and social activities. Avoid too many lectures from outside speakers, but be alive, when it is known that someone of note is visiting the district, to see that he or she is contacted and asked to address the club, even if it means holding a special meeting. Exploit the local talent, such as the doctor, bank manager, etc. Avoid depending too much upon the district secretary and Departmental officers, who already contribute much to the movement, but who can be sickened if relied on for everything. Include in the syllabus certain ideas which will give younger members the chance to express themselves. Give some thought to the beautification of the district. Combine with other clubs in the district, or better still in the council area, so that a complete syllabus of club, district, and/or council activities can be published in booklet form. Costs could be defrayed by advertising, and other clubs would have the opportunity of sharing ideas; the information would be of value to individual members who happened to be travelling in the area—they would know meeting-nights, place of meeting, programme, etc.

5. **Procedure by Chairman.**—There should be a proper appreciation of the duties of chairman and other office-bearers. Elect the chairman for the year, but, as is practicable, give individual members the opportunity to take the chair for ordinary club meetings. Have a system of marks by popular vote for the best chairman for the year, the reward to be the chairmanship for the ensuing year, always remembering that qualities other than the mere ability to conduct a meeting are essential. In regard to older and advisory members the idea should be paramount that they are acting in the

capacity of guides rather than as controllers of the club. Train the chairman not only in correct procedure at meetings, but also in welcoming visitors, etc. A good chairman can, by judiciously calling upon members, definitely stimulate discussion.

6. **Leadership Tests.**—The aim should be to discover those desiring to develop the qualities of leadership and those possessing a community and civic sense; also those demonstrating such qualities. It would be necessary to devise suitable tests such as confronting the individual with a certain set of circumstances or with a certain problem, and noting his reaction and method of dealing with same. A list could be compiled of those who have shown in the course of the year the qualities essential to leadership—particularly initiative, resource, dependability and a willingness to undertake responsibility and to perform duties, as evidence of the cultivation of critical faculties to all problems—social and other which may arise from time to time. The results of such tests to be submitted to councils, and if approved placed on records. It is suggested that the adjudicators be the immediate past chairman, chairman and advisory chairman; immediate past chairman and advisory chairman to adjudicate in the case of chairman.

(7) **Councils and District Committees to Have Special Meetings to Discuss Report.**—It is recommended that discussion should take place along the following lines: (a) constructive criticism of the above report; (b) additional suggestions; (c) the adapting of the recommendations to the requirements of clubs in each area. It is considered desirable for District Committees to delegate members to visit one club each and explain the ideas. In making the selection the suitability of the members for the task should be of major consideration; wrongly put, the scheme could fail in a club by having the effect of creating a fear complex in junior members.

In conclusion, the aim of the subcommittee has been to put forward recommendations that will lead to the creation of a greater interest in the activities of the club concerned, and develop a sense of loyalty and responsibility without which qualities of leadership would be a liability instead of the greatest asset which a community can possess.

Reports on Club Activities

WESTERN SOUTHLAND.

Dipton.—Annual meeting. Officers elected: Advisory president, Mr. D. H. Milligan; chairman, Bruce Sinclair; secretary, D. B. Milligan; treasurer, A. W. Mair; executive committee, the foregoing officials, with the addition of Bruce King, Ross Lindsay, and L. O'Callaghan. Arrangements were made for a field day, to take the form of an outing on hacks to visit "The Bastion" and "Warwick Downs." This club has a membership of seventeen.

NORTH OTAGO.

Enfield.—Business meeting. Date of annual meeting fixed for April 5. Eight members present out of a membership of 21.

HOROWHENUA.

Levin.—Decided that parcels be sent every three months to members of the club serving overseas. Talk by Mr. Stevenson on "The Identification of Weeds and Grasses." Twenty-two members were present. At the previous meeting Mr. R. McM. Law gave a talk on "Grassland Farming" to an audience of twenty-four members.

WAIRARAPA.

Masterton.—Annual meeting. Officers elected: Advisory president, Mr. N. Blatchford; chairman, W. D. Buick; secretary, H. James; treasurer, A. E. Cave; executive committee, club officials with the addition of G. Cave and D. McLaughlan. There was an attendance of thirty members.

HAWKE'S BAY.

Dannevirke.—Annual meeting. Officers elected: Advisory president, Mr. L. Feierabend; chairman, B. Ellingham; vice-chairman, J. Lowes; secretary, J. L. Sunderland; treasurer, D. Limbrick. Executive committee, D. Simmons, J. Allardice, R. Kopua, J. Wild, G. Cross, P. Gibbs, W. Simons, and H. M. Poole; delegates to New Zealand Farmers' Union, the chairman and secretary; hon. auditor, Mr. L. F. Allen; advisory members, Messrs. W. N. Russell, P. N. Hudson, B. Bary, H. R. Chrisp, A. Kinghorn, R. J. Macdonald, D. T. Scott, and H. M. Tatere. There was a particularly good attendance at the meeting. The club's present active membership stands at 63, of whom 31 are serving in the armed forces.

KING COUNTRY.

Otorohanga.—Two new members enrolled. Mr. J. Nickolson, a missionary on furlough from Nigeria, gave an interesting talk on his travels from New Zealand to Australia, South Africa and England. There were 23 members present out of a total of twenty-seven. At the previous meeting the same speaker, Mr. Nickolson, gave a lantern lecture on his work in Nigeria, dealing in a most instructive manner with the country, its products, and the habits and customs of the natives.

BAY OF PLENTY.

Tauranga.—Following on a previous visit to the Tauranga Dairy Factory during the daytime, whilst the factory was in operation, an instructive evening was spent at the factory, inspecting the plant whilst it was idle in order that it could be more fully explained. Mr. Harvey, the manager, conducted a party of fifteen members round the factory, demonstrating and explaining the working of the factory from the landing-stage to the loading of the butter. Commencing at 8.15 p.m., the demonstration was completed at 11 p.m., after which a dainty supper was provided by Mrs. Harvey. The club also held a social during the month, this being attended by the majority of the members. This club has an active membership of nineteen.

Waimana.—Talk by Mr. A. T. Bridger on "Farm Bookkeeping." Five members attended out of a total of fourteen.

Message From a Member Overseas

AN interesting and chatty letter has been received from a member of the Kaukapakapa Y.F.C., North Auckland—C. Draper, who is at present serving in the Middle East. He refers to a copy of the New Zealand Journal of Agriculture, which he had recently received, and goes on to say:—

"I was very pleased to read that the Y.F.C. organisation is still going strong, especially when times and transport are so hard. I read with great interest Mr. Syme's article on topdressing. I often think of the lecture Mr. Syme gave us when we started the Kaukapakapa Young Farmers' Club. I was a bit disappointed that there was not a few lines about the old club in the journal. I have had the pleasure of meeting many members of clubs from all over New Zealand, since I have been here. We are all looking forward to the day when we will be back in New Zealand with our old clubs again. I have seen many different methods of farming since I left New Zealand. I will take this opportunity of wishing all the New Zealand Young Farmers' Clubs the very best through the coming year.

Yours truly,
MICK DRAPER."

Mick's address is as follows:—12085 Driver C. Draper, No. 1 Platoon, 2nd Div. Amn. Coy., N.Z.A.S.C., 2nd N.Z.E.F., Middle East Forces.

His very apparent interest in the organisation, and his evident disappointment at finding no reference to his old club, should spur club officials all over the Dominion to make a point of ensuring that reports of all club meetings and other activities are sent in for publication. Remember—members both at home and overseas are all interested in your activities.

Health Notes for the Farm

Cancer on the Increase

Contributed by the
DEPARTMENT OF HEALTH

CANCER has been described as the greatest unsolved problem of human suffering. No phase of medical research has received more study and effort, but the mystery remains hidden. However, certain important facts have been brought to light, and these have done much in the direction of easing the agony that this dread disease visits on humanity.

Cancer is a disease of middle or later life. It is estimated that of those living at 35 years of age, one man in eleven and one woman in eight will die from cancer. Those figures are startling. Now look at a few figures of our own. In New Zealand the latest returns show that cancer is on the increase—not a spectacular increase, but nevertheless a very disturbing one. In the five years from 1936 to 1940 the death-rate from cancer has increased from 1762 to 1858, or, put in another way, from 11.81 persons in every ten thousand to 12.02. That increase may seem small. It is, but it is also very significant. It shows plainly that, instead of **our** getting the upper hand of cancer, this disease is getting the upper hand of us. One mildly comforting fact is that the main reason for the increase is that curative medicine and preventive medicine are saving more people, and increasing numbers live to the age when they are prone to cancer.

There is no question that the risk of cancer increases with age. In 1940, ninety-two per cent. of deaths from cancer occurred at 45 years of age, or upwards, and fifty-one per cent. at 65 years and over. For every death from cancer it is estimated that there are three living cancer patients. On this basis, then, there are at a minimum estimate 5574 persons with cancer in New Zealand.

Growth of Cancer

In the meantime the intensive search for the cause of cancer continues. We have learned much about it in the last forty years, but the major question still eludes research workers. We have learned, for instance, that cancer is not caused by germs or organisms, and that, therefore, it is not infectious. That is to say, it is quite safe to have a cancerous patient in the house.

In the laboratory, under artificial conditions, it has been possible to implant cancer cells from one mouse to another of the same breeding. But the curious fact is that such cells will not grow in different breeds of mice, or in other animals. Nobody has succeeded in producing cancer in animals by transplanting human cancer cells. For instance, it has been proven in rabbits and mice that long-continued application of coal tar causes skin cancer; X-rays, radium, and ultra-violet light will produce cancer unless there is adequate protection; many chemicals have cancer-producing properties. Nearly three hundred are known to have them.

Chronic irritation of the tissues is not essential to produce cancer; tiny quantities of some of these chemicals can start cancer in animals, and once started, the cancer grows of itself. The chemical is needed to initiate the change from a healthy to a cancerous cell.

Another question which puzzles scientists is whether cancers are caused by chemicals within the body. It has been demonstrated that large doses of female sex hormones can start breast cancer in animals. Scientists are looking for other cancer-producing substances in the body. Just how a chemical substance, or radium, X-rays, or ultra-violet light can turn a perfect cell into a cancerous cell is being closely studied. In fact, control of cancer hinges on this key fact.

Search for the Cause

Most of you are aware of how cancer does its deadly work. It kills by growing and growing, the cancerous cells replacing the healthy ones. These and other facts are emerging from world-wide research. A large volume of cancer knowledge grows while the central mystery remains. That mystery is: What condition is it that tips the normal into a cancerous cell? While awaiting the answer, all we can do as we get older is to seek the early help of surgery, X-rays, and radium at the first signs of any abnormality that might prove cancerous.

The important thing for people to realise is that cancer can be cured if tackled early enough. Therefore, those who suffer from unexplainable lumps, or ulcers, or signs of internal or external irritation should seek medical advice without delay. Don't wait for pain to make itself felt. Pain is the last symptom of cancer.

Perspiration stains will disappear quickly if you mix some baking soda to a thick paste with water and spread it on the marks. Leave for a few hours, then wash in the usual way.

* * *

Several teaspoons of sugar added to a jelly will ensure it setting even in the hottest weather. If a jelly already made refuses to set, add the juice of a lemon, and stir lightly.

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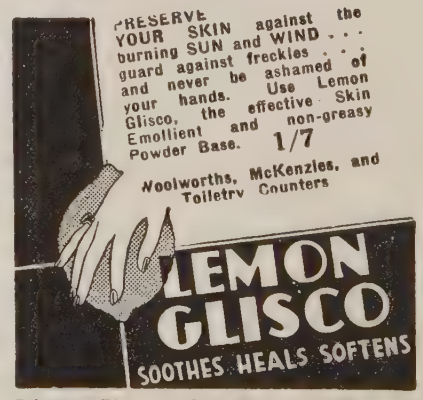
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THE GOOD NEIGHBOUR.

NOW it is autumn of the year, and Eastertide, too. Easter is late this year, just about as late as it can be I believe, for the date cannot fall earlier than March 22nd, or later than April 25th. It may seem strange to our friends on the other side of the world that we celebrate Easter in autumn, for the word Easter is derived from Eostre, the goddess of spring. Yet Easter in autumn can be every bit as beautiful and holy as Easter in spring. Did you ever come across that poem by the writer, Katherine Tynan, called "All in the April Evening?" I think it is one of the most exquisite Easter verses ever penned, and I share it now with you.

"All in the April evening,
April airs were abroad;
The sheep with their little lambs
Passed me by on the road.
All in the April evening,
I thought on the Lamb of God.
The lambs were weary and crying
With a weak, human cry;
I thought on the Lamb of God
Going meekly to die.
Up in the blue, blue mountains
Dewy pastures are sweet,
Rest for the little bodies,
Rest for the little feet.
But for the Lamb, the Lamb of God,
Up on the hilltop green,
Only a cross, a cross of shame,
Two stark crosses between.
All in the April evening,
April airs were abroad,
I saw the sheep with their lambs,
And thought on the Lamb of God."

I knew you would enjoy it.

Now to thoughts of other things. I had a joyous letter the other week from "Tinkle, Tinkle," and I know that you will love to read it, too. She wrote: "Have you ever made a 'nosegay of happiness' at the end of the day? Even on the most ordinary days one can find little things that have given joy, and if you stop and consider them, their littleness grows, and you find that that 'blue' day has not been so bad after all—and you remember the lark's song long after you have forgotten that burnt cake, and that pile of ironing you had to do!

From Me To You

Some one has said—"When we were quite young children, our mother used to make us tell her each day, at bedtime, six things which had made us happy during the day. There were always more than six, and we gathered them into a sort of nosegay of happiness, gratefully, before the day closed."

"It's rather fun gathering the 'flowers' —a posy gathered on a day of rain is so different from one picked on a sunshiny day. And even a posy gathered on an indoor day can be beautiful.

"Yesterday had sun in it, and here is my nosegay—the song of a chaffinch; a field gold-over with dandelions; children's laughter; blue of the last cornflowers; yellow of ripe plums; and ten new ducklings. Isn't life good?"

Thank you, "Tinkle, Tinkle," for your idea. Since your letter arrived I have tried every evening to gather a nosegay of happiness, and I do agree with you that it makes even that blue day seem a lot brighter.

I know you will all start making nosegays of happiness now, so do let us share them—it will be interesting to compare one nosegay with another. Don't forget, next time you are writing, to send in your nosegay of happiness, so that we may all share its fragrance with you.

Mary

In a Church

So many people, things,
They rob me of myself,
They scatter me
Until there's nothing left of me—
Somehow, somewhere,
I've got to find myself—
Find myself, only to lose myself again—
Not in the many,
But in one single thought, prayer or purpose.
Sometimes a book finds me,
Sometimes a song or strain;
An expanse of sky, a bit of sea
May stretch me taut
So that I can take myself all in again.
But God, a church!
A place where it's quiet, even when there's music;
A church with line, colour, a fragrance
From flowers placed on the altar—
I love it.
Meditation, prayer, inspiration,
Each and all together make my experience rich.

Eastertide

I sought the soul of Eastertide. . .
Through lofty halls that Nature made of leafy fern and tree,
In every little winding way I sought the soul of Thee,
Pursued my goal with eager eyes, a heart with zeal aglow,
Yet everywhere I searched for Thee, Thy spirit did not go.

A peaceful, hallowed church I found, that eventide made dim,
And worshipping, I heard the bells that bade me enter in.
Then like a child whose eager feet could scarcely let him wait,
I sought the soul of Eastertide—and entered in the gate.

I sought the soul of Eastertide . . . and here with joy I found,
That love and peace and kindliness made Eastertide abound;
And so, with meek and lowly air, I prayed that there would be
Forever that dear love and peace deep in the soul of me.

"Your labor is for future hours"

Ye rigid ploughmen! Bear in mind
Your labour is for future hours.
Advance! Spare not! Nor look behind!
Plough deep and straight with all your powers!

And that is the duty of us all — to plough straight and deep with all our powers. To bring to every task in the fields, in the factory, or in the home, a strong determination to work for the happier world to come. To-day the Onehunga mills are sparing nothing in their efforts to weave for war, and that is why you may not be able to buy your requirements of Onehunga products. But the future hours will surely come when our labour reaps its own reward and the good things of life will return in plenty. Among those good things will be Onehunga Woollens, on active service again for the comfort of New Zealanders.

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Love Your Neighbour

THIS competition brought in some really inspiring ideas, and crtainly proved to me what I knew was so true, that everyone of you was a "Good Neighbour" in the highest sense of the word when it came to helping one another.

First prize in this competition to "Sunny," Waikato, with two of you second equal, "Maida," of Picton, and "Susan," Northland. Keep on keeping on, Good Neighbours, in your work of helping each other.

First Prize

MANY of us have always had a desire to be the kindly, understanding, perfect neighbour, ready and willing to "love" those living near us. But if we were truthful we would add—so long as the people were those who would make an appeal to us. Life in its funny old way of jumbling us all up seldom provides that ideal situation wherein we could blossom forth. We mostly need to look, because we want to, for the everyday little human things that help to make life happier for our fellow-men.

The late Rev. Pat MacCormick in his last sermon as vicar of the Empire Church, London, preaching on this question of "loving your neighbour," said this did not mean an affection for people with whom one would sometimes have nothing in common, but a real concern for your neighbours' welfare. If you were concerned about him, you would go and see if all went well with him. There might be a helping hand you could give, cheer, sympathy, or be a friend he could chat with. "That," he said, "was loving your neighbour."

It means so much to each of us to feel we matter in some way to others and it costs so little to give. When our boys return from overseas, tired and jaded, they will expect us to have grown and developed in that sense of caring for one another. Haven't they been sacrificing their all in doing just this for us? We must not fail to have kept in step along by their sides, nor forget, when victory comes, how precious a thing this feeling of comradeship amongst so many of us has become. We must go on cherishing it, remembering to say and to do the kind of things that will prove that we, at least, are concerned about our neighbours' welfare. My opportunity to be of help just now has come this way. My nearest neighbour has a tiny new daughter. Till the mother is stronger I am going to see she does not need to worry about her washing. I am letting her have my own daughter of twelve, my grand little housekeeper who usually gets breakfast and tea while I milk, to do similar things for her for a time. Jennifer is thrilled at her chance of helping to win the war, different from home routine. While for us, well, isn't it a grand chance!—**Sunny, Waikato.**

Second Prize:

WHO is my neighbour? It is he whom thou has power to aid and bless. Well, what am I doing extra to help? I have set an extra place at my table and make it a practice to invite any boy or girl in the services to come home and share what I have, to wash or press their clothes, and write letters. And don't some of them appreciate it too! Occasionally, very occasionally, I get a rebuff, but that keeps me from getting too perky.

It's not much, but the strange boy or girl who is brought home from church really appreciates the home life. Sometimes a bath or a bed is offered and accepted. In our little town they come from all parts on Sunday or weekend leave, and it is just a bit of home. They don't ask for amusements—just poke round inside and out, do as they like, and see things: sometimes "a sugar bowl like Granny had" or "an old hat like dad's." They are free to do as they please.

If you are thinking of a new costume for Easter holidays, why not choose one of these dashing plaids, as worn by Loretta Young, the Columbia star? Costumes are always smart, and the smartness of this one is accentuated by the collar of the white blouse worn beneath it.

Then the nurses and probationers in our local hospital are only there for short periods, as they are sent from the main centre to do one to six months' duty, and, knowing no one, time hangs heavy when they are off. They too know my open door and come any time. They go away warmed and cheered feeling somebody cares, and there is a welcome, with a quiet corner for study, or a ready ear to hear, and a heart to sympathise,

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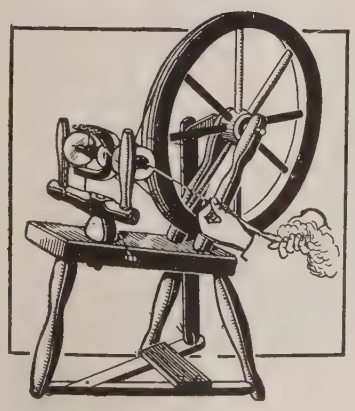

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and their cares are forgotten while they chat about flowers, home, or look through my bags or boxes for a thread of this or a tiny bit of that to repair a garment. It is only a little, but it is a touch of home.

"We can all do more than we have done
And not be a whit the worse,
For it never was loving that emptied the heart
Nor giving that emptied the purse."

They all need home and mother, a place to relax. Maybe sometimes it is a young wife, her husband in camp or overseas. Mother or Dad did not just like her getting married, and well—there is something going to happen and Will is not here to share the secret, so one sees the wistful look and says, "Come along, I always make a cup of tea at three and do love company." They too feel it is nice to share. That is my little bit of loving my neighbour.—**Maida, Picton.** (Please send name and address.)

Second Equal:

ONE of our neighbours, a little Maori woman with a huge family, was expected home with the latest arrival. We cooked a tasty meal for her, my two little girls picked flowers, set the table, lit the fire, and the kitchen looked quite charming. I left them to greet her and make her a cup of tea. When they came home, I asked, "Well, what did she say?"

"She didn't say anything," said Nora, quite disappointed. "She just sat down and cried." So then I had to explain that there were different kinds of tears, and that hers were tears of gratitude.—**Susan, Northland.**

WITH the title of this competition in my mind, come the well-known words of Kipling:

"It ain't the guns nor armament
Nor funds that they can pay.
But the close co-operation
That makes them win the day."

That's it—"the close co-operation." We cannot all be in the many spheres of Army, Navy, or Air Force so much to the fore today, neither can we all be in the town nor in the country; but wheresoever we be, we are neighbours of some one, and "good" neighbours not "bad" neighbours do much to win the war. Opportunities come to us, maybe regularly, but maybe irregularly, to prove our worth, and I find in following my daily round that it is very often the little things that count—an offered lift into town means much these limited petrol days;

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Rainster

care of children at necessitous times; passing over the fence, as it were, of surplus fruit or vegetables—oh—there are numerous little acts of kindness that cost so little but mean a lot to a neighbour. What a link magazines and books form—and many a one I lend or have borrowed. When I was first married, I had on one side a neighbour who contradicted everything I said or did, whilst on the other was a most considerate woman, who could not do enough for me, although we were farms apart. I registered a silent vow that I would endeavour to be the follower of the latter; for we must inevitably feel that it is not what we get out of being a true neighbour, but what we put into it, that counts. — **Roundabout, King Country.**

Competitions

April:

Have you decided what you are going to write about in our April competition? Remember the subject is one that vitally interests us all, so send in your entry before May 15th—"What are the attributes of wise parenthood?"

May:

Every one of us has some fear of one sort or another—many folk do not like being left alone in a house, while others dislike the dark, or perhaps have a real fear of the water. Have you a strange phobia of this sort? Let us read about it if you have.

"STRANGE PHOBIAS."

Send in your entry before June 15th, and you may win one of the prizes: 10/- first and 5/- second.

"MARY,"
C/o "Journal of Agriculture,"
P.O. Box 3004, Wellington.

A NEW neighbour recently lent us an extension loud speaker for the wireless, so that a sick man who could not see to read would be cheered. Having the wireless to listen to was worth half a dozen visits from the doctor to that man. Well, when I returned the extension, I did try to express my thanks, but my neighbour just replied, "What are we here for if it isn't to help one another?" Isn't that a grand spirit?—**Just a Neighbour, Morrinsville.**

IN our district is a young woman bravely carrying on the small farm while her husband is soldiering overseas. Living in a rather isolated part, and having several small children, but no car, she does not get out often. Some of the men help her in different ways. They have dug her potatoes, topdressed her paddocks, cut out and given her a lorry load of firewood, and they keep the wood pile going. But perhaps what helps most in this case are the little friendly chats as we go by, and sometimes taking her and the children into the neighbouring town—**Haruru, Kaukapakapa.**

WHAT a thrill it is to receive a new recipe, especially an economical one, with a little sample to try! Then too in the busy fruit season of jam making and preserving, especially when one has young children, what a big help it is for a neighbour to pop in and help with the endless peeling of fruit, or to amuse the kiddies for an hour or so. Particularly if your neighbour is a busy one, do persuade her to go for a quiet stroll some day, even if it is over the same old paddocks she sees day in and day out—your company, the stillness and beauty of Nature, the joy of bird songs, these are bound to bring peace to her weary soul, and she will go back to her tasks refreshed in body and soul. The best way to be happy is in making others happy. So give of your time, your love, your energy, be a cheerful giver, but, above all, forget the gift.—**Fruffy, Te Awamutu.**

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YOU REMEMBER?

Remember the bright beauty of days when you bundled the kiddies into the car and headed . . . anywhere? Remember sun-drenched beaches and lake-shores at sunset, your man at your side, and all the glad glory of that paradise, yours for the taking . . . remember?

You must not forget. In all the grimness of this wartime existence, keep your picture of beauty intact. Beauty will come again.

We at Berlei cannot now give you beauty as we dream it; war ties our hands. But we can help you keep your body strong and vital and young, for the day when you will again clasp beauty to you. We look forward to that happy, unrestricted day when we may once more make beauty an end in itself in a Berlei — just as before . . . you remember?

* * * * * *

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Easter Time is Egg Time

I WONDER if the shops this Easter will be as bright as ever with the gay eggs and Easter novelties that we knew before these days of wartime? I doubt it, and yet there is so much of the old spirit of Easter wrapped up in the gay Easter eggs that I do hope you all make an effort to do something about eggs this Easter. And even if the shops are not full of the usual novelties, what is there to stop you making your own? I have a friend who has always made her own eggs for her kiddies, and they are quite as good as any shop-sold product. So this year perhaps you would like to try her recipe, too? It is quite a simple one, and I am sure you will have no difficulty in making eggs that are every bit as fascinating as those eggs of yesteryear.

EASTER EGGS

Peel and cook a potato, add a small piece of butter and milk, then mash and cream all together, making sure there are no lumps. Put this mixture into a basin and add, a little at a time, enough icing sugar to make a firm mixture that you can mould easily. Some potatoes will absorb more icing sugar than others, so if you need only a small quantity use a teaspoonful of potato at a time. The mixture may be coloured and flavoured in any way; it tastes rather like marzipan, and has no potato flavour at all.

Now to make your eggs, divide the mixture into two portions. Colour one-half yellow, and flavour with vanilla. Dust the hands lightly with sifted icing sugar, and mould a piece of the yellow into an oval shape. Then put a small portion of the remainder of the mixture, which is still white, on a piece of greaseproof paper, roll it to about half an inch in thickness, wrapping it round the yellow oval, moulding it into shape, and set aside to dry a little. The eggs can be made any size, and one large or several small eggs make an attractive gift.

To chocolate-coat the eggs crumble finely any good make of dark eating chocolate into a clean saucepan. A large bar will do quite a number of eggs. Stand the saucepan containing the broken chocolate over another saucepan containing boiling water and let the chocolate melt slowly, otherwise it will dry spotty.

Now into the hot melted chocolate dip the eggs one at a time. A fork stuck firmly in holds the eggs nicely; put on greaseproof paper to dry. The eggs may be left plain or patterned, and fancy designs may be marked on them while they are still moist.

To decorate the eggs use a little of the white mixture, and colour it pink. Roll to a thickness of a quarter-inch, and cut or mould small flowers, placing them in position in the centre or on one side. For instance, one pink and one yellow flower with a green jelly sweet cut into thin slices for leaves looks most attractive.

The eggs look just as pretty without the chocolate covering, and a little more uncommon. Flavour the mixture with almond essence, make a white egg centre (instead of yellow), and cover the outside with pink instead of white.

To decorate them, roll out a piece of the white mixture, and cut a long strip, enough to go round the egg, about ½ inch to 1½ inch wide, according to the size of the egg. Place round the centre, and pinch up the edge into a fancy pattern. Decorate the band with tiny flowers made of the mixture, silver balls, or a decoration made by using your cake icing outfit. If preferred a piece of pretty ribbon may be tied round the egg.

One year my friend made a nest of plaited crepe paper, and lined it with a little paper straw, then placed her eggs in this nest, with a gay chick perched on the side. It did look delightful. Another year, as a novelty, and instead of filling the egg all through with the mixture, she put small gifts inside instead of the yolk, and what fun they caused!

Columbia starlets Shirley Patterson and Adele Mara. Shirley feeds the hens while Adele collects the eggs.

COLOURED EGGS

What about ordinary eggs coloured for breakfast on Easter morning? We have often coloured them by adding cochineal to the water in which they are boiled, or, if you have a number of small tins such as cocoa tins, fit these tins closely into a large saucepan, half-filled with water, and then into the cocoa tins, also half-filled with water, add crumpled pieces of gay coloured crepe papers, of colours that will run easily. Now pop one or two eggs into each tin, and cook in the usual way. If you have an artist in the family, get her to make pencil sketches on the eggs before they are put into the coloured water. We had lots of fun one year with funny faces on one side of the egg, and greetings, such as "Happy Easter to Mother" on the other side.

While we are on the subject of eggs, here are a few hints that may be useful to you, even after Easter has come and gone.

If you want to find out the age of an egg, break it and observe the yolk. If it stands up from the white, the egg is fresh; the older the egg, the flatter the yolk becomes, until it finally becomes so flat that it breaks through the membrane of the egg when the egg is shelled.

If you take eggs out of the refrigerator and want to boil them, place them in warm water for a while, and if boiled slowly they will not crack.

If you are making egg sandwiches, scramble the eggs instead of boiling them. They will go a lot further that way.

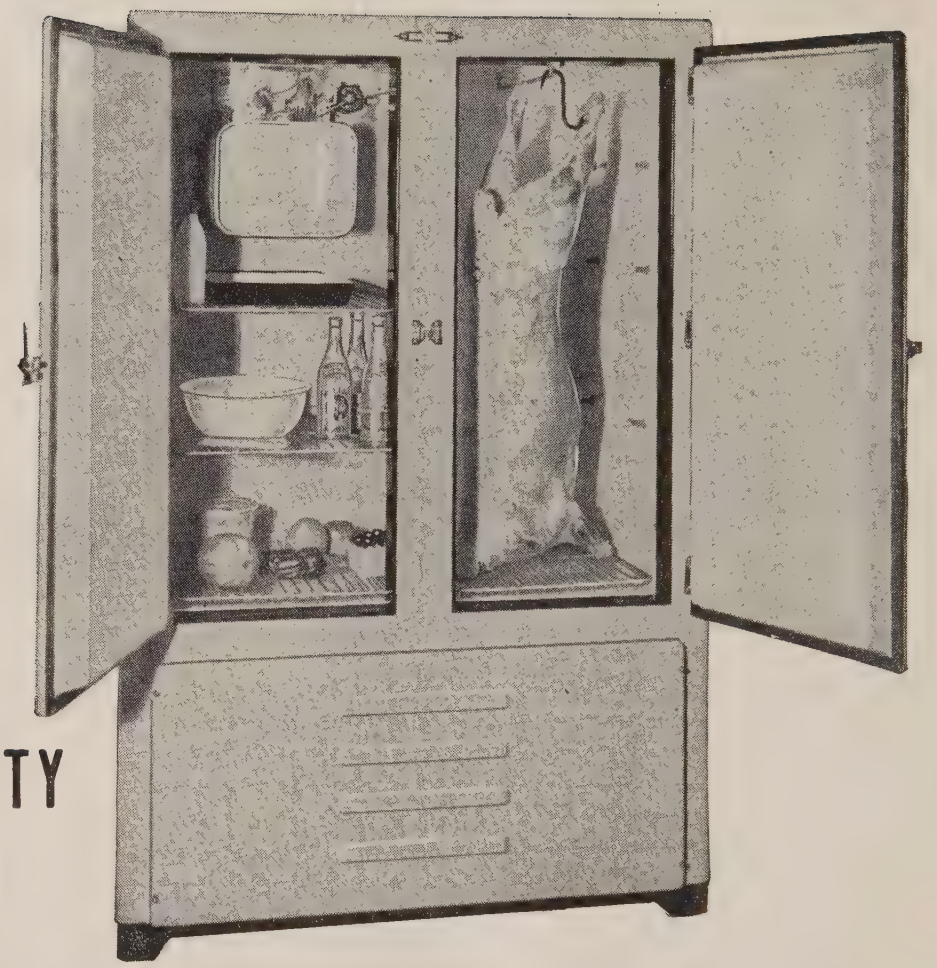
Ever tried putting pastry cutters into the frying pan when you are frying eggs? Break the eggs into them, and you will be delighted with the dainty eggs that are the result.

When storing eggs be sure to store them with the small end down, for they keep better this way.

And did you know that one hen's egg is richer in food than a dozen oysters?

EASTER TIME

What about an Easter tree for the kiddies? They will love it! Put a twiggy tree in a large bowl, stand it in the centre of the breakfast table, and hang brightly coloured Easter eggs and fancy trimmings on the branches. Perch fluffy chickens among the twigs, make nests of moss and straw, and in them put speckled sugar eggs.



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Mary's Mixing Bowl

Cooking For Easter Meals

The Lenten season over, the housewife turns her ideas to cooking for Easter. And Easter for most people means a spell from their usual everyday work, although this year Easter is so late that I am afraid there will not be many picnics in the open. Most people order their hot cross buns from the grocer, but here is a special treat for you if you are eager to make your own buns this year.

EASTER BUNS

Mix ½ lb. flour with ½ oz. yeast mixed smoothly with a cup of tepid milk. Beat this creamy mixture for 5 minutes, and put in a warm place for an hour and a half to rise. Beat the risen batter with another ½ lb. of flour, 2 dessertspoons butter, 2 oz. currants, 2 tablespoons sugar, a small teaspoon of nutmeg and mixed spices, an egg and a pinch of salt. Set to rise for another hour, form into buns, put on a floured tin, and leave for 10 minutes to rise. Bake in a quick oven till nicely coloured, and glaze with syrup made by boiling a tablespoon of sugar in half a cup of water. And don't forget to mark your crosses on your buns!

If you are having guests on Easter Day, try your hand at this novelty cake. But don't attempt it unless you have plenty of time at your disposal.

EASTER EGG CAKE

Cream 1 cup butter and 2 cups sugar, add 4 well-beaten eggs, and beat again. Add 1 cup milk in which 1 teaspoon bicarb. soda has been dissolved, sift in 3 cups flour, 2 teaspoons cream of tartar, 1 small teaspoon spice, a few chopped cherries and nuts. Bake in 2 equal-size well-greased enamel or aluminium pudding-basins. When cold join the two cakes together with sherry icing made as follows: Mix together 1¼ lb. icing sugar, 2 tablespoons melted butter, 1 tablespoon sherry, and enough hot water to make a smooth paste. Leave till set, and cakes are firmly joined, then turn cake on its side on a plate, and ice all over with the sherry icing. When dry, ice with a firm icing made with 1 egg white, 1 lb. icing sugar, and enough water to make it smooth. Leave overnight to set. With a small paint brush and cochineal paint a band of ribbon round the middle of the cake, and bow on top. A fluffy chick on top completes this novelty cake.

What about a tasty dish for lunch on one of the Easter holiday days? Here is a favourite of mine.

SCALLOPED EGGS WITH HAM OR TOMATOES

4 hard-boiled eggs; 2 cups cold boiled ham, chopped fine, or minced; 5 or 6 tomatoes, 1 cupful white sauce, 2 cupfuls breadcrumbs. Cut eggs into slices. Cover bottom of greased pie-dish well with breadcrumbs, then add in layers ham (or cut up tomatoes), eggs, sauce, crumbs—being sure to save crumbs to cover top. Season with pepper and salt. Put little bits of butter on top. Bake in a moderate oven for twenty minutes.

TOMATO EGGS

Scoop out some of the fleshy part from four tomatoes, being careful not to break the tomatoes. Pepper and salt the inside, and break an egg into the middle of each. Over the top lay a thin rasher of bacon, and a piece of butter. Place tomatoes in baking dish, and cook in a moderate oven till eggs are set.

Here is a good pudding if the weather is cold.

GOOD FRIDAY CREAM PUDDING

Beat well together 3 eggs and 1½ cups sugar, add 1½ cups cream in which 1 teaspoon baking soda has been dissolved. Into 2½ cups of flour add 2

For cakes and puddings that everyone enjoys, ensure success with

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54

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teaspoons cream of tartar, 2 teaspoons mixed spice, 2 tablespoons blanched and chopped almonds, a pinch of salt and 1 cup each of stoned dates and raisins. Add to cream mixture, and beat well. Put into floured cloth, boil for 3 hours, and serve with custard.

Perhaps you are a lover of fish dishes? If so, do try these, for they are both very tasty.

Take 1 lb. each of either fresh or cold boiled fish, ½ cup breadcrumbs, 2 tablespoons butter, ¾ cup milk, 2 eggs, 1 teaspoon chopped parsley; season with salt and cayenne, a very little onion juice, and 1 teaspoon anchovy sauce. Chop up the fish, put it in a basin, add the breadcrumbs, butter (melted), the parsley and seasoning; add the milk, with the eggs well beaten. Turn into a well-greased mould, cover and steam one hour. Serve hot, with or without sauce.

FISH IN RAMEKINS

Cooked fish, 2 tablespoons flour, 2 cups milk, 2 tablespoons butter, breadcrumbs, 1 teaspoonful minced onion, 1 tablespoon parsley, grated cheese.

Melt butter in saucepan, and add onion and parsley. Cook five minutes, and add flour. Stir until smooth. Then add milk, cooking slowly until smooth, and season with ½ teaspoonful salt, pinch pepper. Add fish, mixing well. Butter some small ramekins, and fill with this mixture. Cover top with breadcrumbs. Sprinkle with grated cheese, and dot with bits of butter. Brown in the oven and serve hot.

Or perhaps the weather may be warm, and salads will be the order of the day. This salad is delicious.

EASTER SALAD

Six hard-cooked eggs, 1 teaspoonful Worcestershire sauce, ¾ cup chopped celery, shredded lettuce, mayonnaise.

Rub the yolks of the eggs through a sieve over the celery, chopped very fine, and mix with enough mayonnaise flavoured with the Worcestershire sauce to make a moist mixture. Form into balls, each about an inch in diameter, and serve on a nest of shredded lettuce surrounded with a border of the egg whites finely minced. This is a seasonal and attractive Easter salad.

Biscuits are always popular and in demand, so try these.

EASTER BISCUITS

½ lb. flour, 1 teaspoon ground cinnamon, ¼ lb. castor sugar, little milk, 1 yolk of egg, ¼ lb. butter.

Sieve all the dry ingredients into a basin, and rub in the butter with the tips of the fingers until free from lumps. Bind together with the yolk of egg, and a little milk if necessary. The dough should be about the consistency of pastry. Knead with the hand until free from cracks, and turn out on a slightly-floured board. Flour a rolling pin, and roll out the dough to one-eighth of an inch in thickness. Stamp out in small rounds with a cutter, and place the biscuits on a greased and floured tin. Bake in a moderate oven from 10 to 15 minutes. Sprinkle them well with sugar while still hot, and lift on to a wire stand to cool.

And just to finish here is a special treat.

EASTER FEAST CAKE

Dissolve 2 oz. yeast in a cup of milk. Into a warm basin sift 3 lb. flour, make a well in centre, and put into it 2 cups castor sugar, 7 eggs, the grated yellow rind of a lemon, and the yeasty milk. To these ingredients add gradually 1½ lb. warmed and softened (but not melted) butter, beat all together, spread paste about three inches thick on a thinly-buttered baking sheet, and set in a warm place to rise. Butter the top of the cake, sprinkle with coarsely-pounded sugar, and bake quickly in good oven. When lifting cake out of the oven sprinkle half a cup of rosewater over it, and cut cake into oblong slabs about 2 inches wide by 5 inches long. A rich but very delicious cake if properly made. The original recipe came from Bristol, and is said to date back to Saxon times when the Church celebrated Easter with feasting.

JELLIED BEETROOT

2 bunches beetroot boiled till tender, 1 packet red currant jelly crystals.

Dissolve jelly crystals in one cup of water in which beetroot has been boiled, add ¾ cup vinegar. Slice beetroot and place in mould, pour liquid over and leave to set. Delicious served as a salad or with cold meat, etc.

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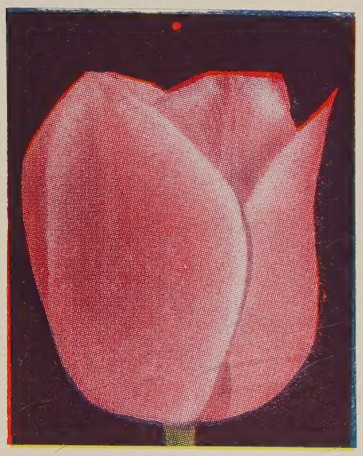

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